

RESEARCHES
IN
CHILD AND
ADOLESCENT
PSYCHOLOGY

SEMINAR READINGS



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Researches in Child and Adolescent Psychology

Seminar Readings

Edited by

ASHOK K. SRIVASTAVA



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FOREWORD

This compilation is the product of the national seminar on "Researches in Child and Adolescent Psychology" organised by the NCERT's Department of Educational Psychology, Counselling and Guidance in September 1990. It is a representative sample of the researches done in this area in our country:

The National Policy on Education (1986) has stressed a child-centered and an activity-based process of learning. If implemented, this will significantly improve the quality of school education in the country. To make education child-centered or learner-centered, sufficient insight is required into the developmental processes of the learner from childhood to adolescence. Many more researches would be required to reflect the total canvas of the present day scenario. It is only at that stage that the characteristics of learner and the demands of the curriculum can be properly matched.

The body of knowledge about the child, the adolescent, the curriculum, the social climate of the school and the entire range of pedagogical processes have, as of now, been taken from other countries, particularly the West. Those researches are the only available resources for the scholars of our country. Studies of this nature, as reflected in the present book, may go a long way in filling the communication gap between the current state of knowledge in the field for the benefit of practising teachers and researchers.

I wish to place on record my appreciation of the efforts put in by the Department and more particularly by the editor, Dr A.K. Srivastava, in bringing out this publication. I do hope that the book will be of great use to researchers in child and adolescent psychology, and practising teachers.

Dr K.GOPALAN
Director

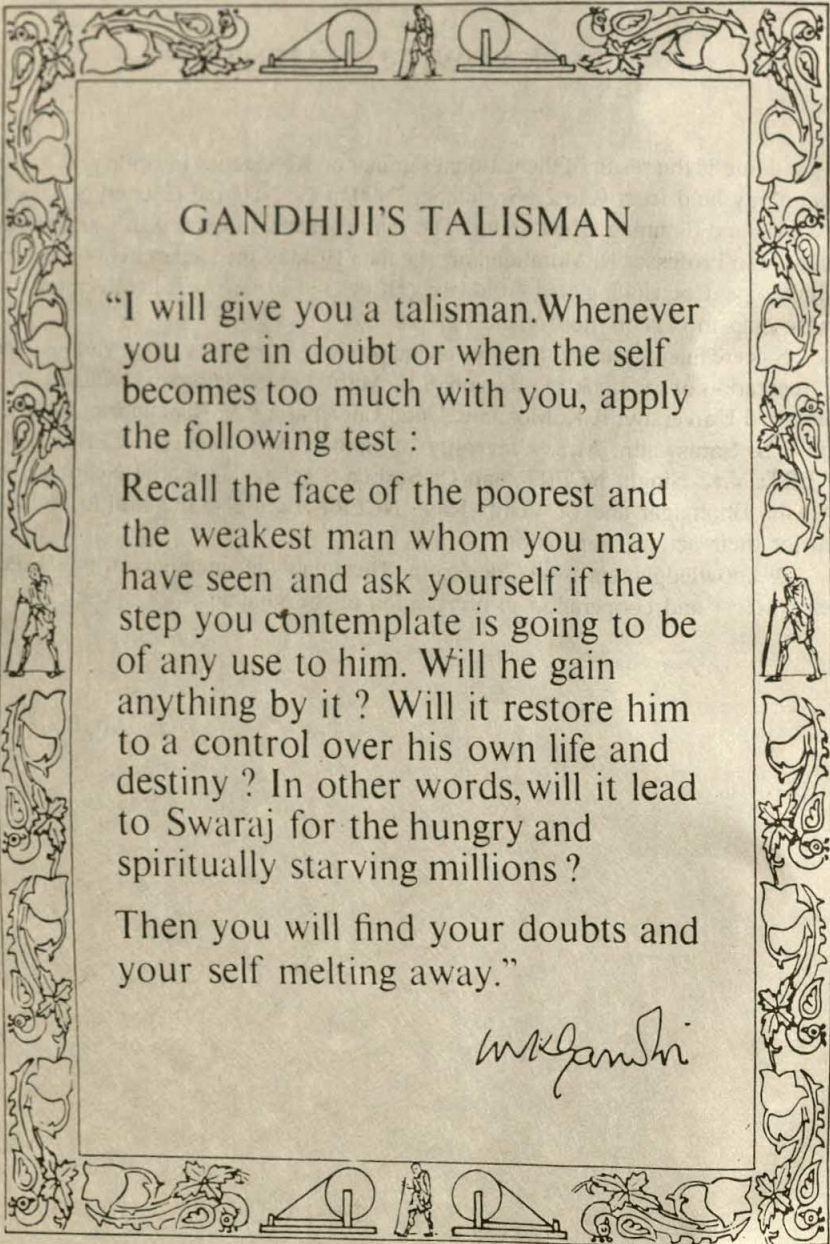
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This volume is the result of the national seminar on Researches in Child and Adolescent Psychology held from 9 to 21 September 1990 at the National Council of Educational Research and Training, New Delhi. The editor wishes to express his sincere debt of gratitude to Professor R. Muralidharan, the then Head of the Department of Educational Psychology, Counselling and Guidance (DEPCG) for her deep involvement and immense help in organisation of the seminar.

Sincere thanks are due to the following persons for participating in various capacities in preparation of the book : Professors S.K. Mitra, Former Director, NCERT; D. Sinha, Allahabad University; A.K. Mohanty, Utkal University; P.V. Ramamurthi, S.V. University; T.S. Saraswathi, M.S. University of Baroda; M.K. Raina, NCERT; N.Vaidya, NCERT; V.K. Singh, NCERT; and Dr Sushila Singhal, Jawaharlal Nehru University; Dr Asha Bhatnagar and Dr Venita Kaul, NCERT. I am also thankful to the contributors for their active cooperation.

Acknowledgement is also due to the Head and staff members of the DEPCG for their interest and cooperation in preparation of the volume.



GANDHIJI'S TALISMAN

"I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test :

Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it ? Will it restore him to a control over his own life and destiny ? In other words, will it lead to Swaraj for the hungry and spiritually starving millions ?

Then you will find your doubts and your self melting away."

M.K. Gandhi

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CONTENTS

FOREWORD

ACKNOWLEDGEMENTS

CONTRIBUTORS

		iii
		v
		vii
1. Introduction to the Volume	Ashok K.Srivastava	1
2. Information Integration Model : A Strategy to Study Cognitive Growth	B.C.Kar U.N.Dash	6
3. Schooling and Information Processing : An Empirical Study with Santal Tribal Children in Orissa	Sudhakar Rath	16
4. SES and Time-related Effects of Pre-school Education on Cognitive Abilities	Kasturi Jachuck	24
5. Problem Solving as Related to Intelligence and Personality in Socially Deprived and Non-deprived Children	Suman Verma Vidhu Mohan	32
6. Phonological Awareness and Reading Acquisition in Kannada	P. Prakash D. Rekha	47
7. Development of Concept of Ability : A Cross-cultural Comparison	: Baljit Kaur	53
8. Effectiveness of Intervention Strategies with Learning Disabled Children	J. Rozario M. Kapur K.Subbakrishna	63
9. Should Your Child be Left-handed	Ashok K. Srivastava	70
10. Impact of Television on Life Style of Children	Usha Abrol N.Khan	80
11. Psychosocial Development of Children during Adolescence	N.Usha Rani V.Venu Mohan Reddy M.Vishnuvardhan Rao	90
12. Identity of the Adolescent Girl : Rural-urban and Social Class Factors	Neerja Sharma S. Anandlakshmy	106
13. A Study of the Adolescent View of the Changing Role of the Mother	Cima M.Yeole	117

14.	Perceived Parental Marital Violence : Implications for Hostility and Sex-role Orientation among Late Adolescents	<i>V.Kalpana Rao</i> <i>George Kurian</i>	123
15.	Loneliness among Adolescents in Relation to Personality and Cognitive Measures	<i>Sushma Upmanyu</i> <i>V.V Upmanyu</i> <i>Monica Dhingra</i>	132
16.	Psychological Problems of Adolescents in Relation to Intelligence and Socio- economic Status	<i>Pushpa Chaudhary</i> <i>Balvinder Kaur Minhas</i>	140
17.	Psychoticism and Neuroticism among Aggressive Adolescents of Rural and Urban Schools	<i>G.C. Rai</i>	147
18.	Differential Personality and Academic Achievement of Traditional and Modern Accultured Saora Tribe Adolescents	<i>Bhujendra Nath Panda</i>	153

Introduction to the Volume

ASHOK K. SRIVASTAVA

THE PRIMARY objective of a nation is to build an enlightened and humane society. This is only possible if we are able to make universalisation of education a reality. In India, despite our best efforts to provide education to all children, cent per cent literacy seems to be a distant dream. Currently half the children do not go to school and more significant is the percentage of dropout which is quite high, of 100 Children enrolled in Class I, nearly half of them do not reach Class V. The situation is rather more disappointing at the elementary and secondary stages of education. This may be due to several reasons, such as, lack of interest among children and parents because of mismatch between education and demands of the society; inability of the teachers to understand and appreciate the characteristics of children in general, and disadvantaged children in particular; inadequate teaching-learning strategies, such as emphasis on rote learning and restrictiveness; and of course, poverty.

In order to overcome these problems, it has been agreed that the child-centered and activity based process of learning should be adopted. Children should be allowed to set their own pace of learning and supplementary remedial

instruction should be provided to increase the component of cognitive learning as the child grows. This is only possible if we are able to understand the developmental characteristics of children and youth and match education with learner's characteristics.

Much of our knowledge about the learner, however, is based upon the researches carried out in the western countries. Though attempts are being made in the departments of psychology, education and child development in our country, the research in the area is still in its infancy. Further, the available information is not being reflected in the teaching-learning process primarily due to the lack of communication. Ours being a developing country, we experience special kinds of problems. Indian children and youth are undoubtedly different from those of the western countries. There is a great demand to understand the psychology of children living in rural and slum areas below the poverty line and tribal children where the fruits of development are yet to reach. The eco-cultural context, in which different tribal communities live, poses special demands on the inhabitants which needs to be explored in that perspective. The integration of such children

to the mainstream requires special attention. In order to develop a proper understanding about Indian children and youth, the Department of Educational Psychology, Counselling and Guidance of National Council of Educational Research and Training, New Delhi, organised a national seminar on Researches in Child and Adolescent Psychology from 19-21 September, 1990. The main objectives of the seminar were to provide a common platform where researchers, particularly young researchers, working in the area of child and adolescent development, could gather, discuss their studies and problems, and enumerate areas where more research is needed. The present volume contains some of the studies/articles presented in the seminar.

A close scrutiny of the volume may reveal that, as the studies on child development are concerned, the study of cognitive development is one of the most fascinating area of research for Indian researchers. Attempts have been made to examine the effects of environmental variables on the development of cognitive abilities and cognitive processes. Kasturi Jachuck studied the effects of pre-school education in "SES and time-related effects of pre-school education on cognitive abilities", and the relationship between problem-solving and intelligence was examined in "Problem solving as related to intelligence and personality in socially deprived and nondeprived children" by Suman Verma and Vidhu Mohan. The results of both the studies have indicated the superiority of children coming from high socio-economic status (SES) homes than their low counterparts.

In recent years there has been a shift away from studying cognitive abilities and emphasizing on the cognitive processes. Based on Luria's (1966, 1984) conceptualization of human psychological processes as a structure for intelligence/cognitive functioning. Naglieri and Das (1990) have proposed Planning, Attention, Simultaneous and Successive (PASS) cognitive

processes as a model for intelligence. B.C. Kar and U.N. Dash in their paper "The information integration model: A strategy to study cognitive growth" have attempted to extend the validity of this model in Indian situation. Sudhakar Rath tried to examine the impact of schooling on information processing in "Schooling and information processing: An empirical study with Santal tribal children in Orissa". The results of the studies highlighted the cognitive consequence of schooling in the framework of information processing model.

The development of language is another important area of research. The study "Phonological awareness and reading acquisition in Kannada" by P. Prakash and D. Rekha reports an increase in phonological awareness and reading with the increase in age in one of the Indian languages.

Based on the cognitive view of motivation that holds that all behaviour is mediated by an individual's beliefs and thoughts, Baljit Kaur in her research "Development of concept of ability : A cross-cultural comparison" observed clearcut developmental trend with younger children not being able to differentiate between ability, effort and outcomes. The pattern of development of the concept of ability among Indian children was found to be similar to the pattern observed for the children of New Zealand and United States.

Individuals are different from others and, at the same time, they share significant and unifying similarities. Human potential and performance are not fixed but occur along a vast continuum. Skills and abilities vary from one individual to another and may vary greatly, as well, within a single individual (Haring and McCormick, 1990). There are individuals whose exceptional needs and abilities result in their requiring different educational services from those provided to their peers. J. Rozario, M. Kapur and K. Subbakrishna have attempted to develop

and use intervention strategies for such children in their study "Effectiveness of intervention strategies for learning disabled children".

The article "Should your child be left-handed" by Ashok K. Srivastava attempts to examine the etiology, incidence and correlates of left-handedness among children. It also attempts to remove some of the misconceptions associated with the use of lefthand even since Biblical times.

Some call the present an age of media. The pervasiveness of mass-media in our lives as forms of entertainment is obvious. Not so obvious, but nearly as pervasive, are the use of media for learning. Here and now, in school and at home, children are enjoying the benefits of learning through mass-media. "Impact of television viewing on lifestyle of children" by Usha Abrol and N.Khan examines the extent of such learning through massmedia. Though significant impact of television was observed in the present study, the impact was not so pervasive as found in the western countries.

As important as the child development, the study of development during adolescence is equally, if not more, important from educational point of view. Adolescence is a crucial period in the life of an individual that determines his future career/life. Accepted as a problem age, it is an important link between childhood and adulthood. The present volume contains few studies describing the characteristics of development during adolescence in our country.

The research "Psychosocial development of children during adolescence" by N.Usha Rani, V.Venu Mohan Reddy and M.Vishnuvardhan Rao is a sort of follow-up study examining the development of intelligence, adjustment, and anxiety levels among children aged 9 to 11 years. Their observation was that the nutritional status significantly affects the development of intelligence of the children but not the other variables.

A group of studies have tried to examine the adolescents' perception with regard to themselves and their immediate environment. Neerja Sharma and S. Anand-lakshmy in "Identity of the adolescent girl: Rural-urban and social class factors" have demonstrated that low and high SES girls showed more conformity behaviour while the girls from middle SES families were more resentful. The paper "A study of the adolescent view of the changing role of the mother by Cima M. Yeole reflects that adolescent girls want their mothers to play a mixture of traditional and modern roles.

Socialization is the process by which individuals acquire the motives, values, knowledge and behaviour patterns needed to function adequately in a society. The process of socializing the child takes place through a number of avenues including neighbours, school, television and contact with playmates but the family has been considered a primary arena for socialization (Maccoby, 1984). Majority of the families, however, in recent times are witnessing violence and children are made silent spectators of such violence. V. Kalpana Rao and George Kurian in their research "Perceived parental-marital violence: Implications for hostility and sex-role orientation among late adolescents" have attempted to examine the impact of such violence on adolescents' behaviour.

Another group of studies have concentrated on the study of personality/behavioural problems of adolescents. Pushpa Chaudhry and Balvinder Kaur Minhas tried to examine "Psychological problems of adolescents in relation to intelligence and socio-economic status". The papers "Loneliness among adolescents in relation to personality and cognitive measures" by Sushma Upmanyu, V.V. Upmanyu, and Monica Dhingra; "Psychoticism and neuroticism among aggressive adolescents of rural and urban schools" by G.C. Rai; and "Differential personality and academic achievement of tradi-

tional and modern accultured Saora tribe adolescents" by Bhujendra Nath Panda fall into this category.

The studies presented in this volume may be, to some extent, considered representative of what is going on in this country in the area of child and adolescent development. But this is certainly not all. Much more is being attempted but the attempts are sporadic and are not need-based. The researches clearly lack a conceptual framework and may be characterized by methodological inadequacies in terms of operationalization of concepts, selection of measures, and the strategy of studies (Misra and Tripathi, 1991). Operationalization of concepts often lacks correspondence with specification of variables being tapped. The measures used in most of the studies are not appropriate since (a) some of them are simple translations from English to an Indian language, and (b) the psychometric properties of some of the tools are unknown. Further, the researchers have been more interested in fitting their studies in the format of an experimental design and apply Analysis of Variance to propagate cause-effect relationship. The misuse of statistics is quite obvious in these studies. This would certainly not be helpful in improving the present scenario of developmental psychology in India. Rather, the development of culture-appropriate tests; more use of observation, in-depth interview, and case-study methods; use of multi-dimensional approach and multi-dimensional analysis (qualitative and quantitative), and the inputs from related disciplines (e.g. sociology, social work, anthropology, literary studies) would go a long way in improving the status of Indian researches.

One of the major objectives of the seminar was to identify gaps in the researches and enumerate areas where more research is needed. A brief description of the areas identified in the seminar are presented below:

- Need to concentrate on process research from an Indian point of view;
- Need to conduct developmental research of true nature;
- Review of Indian researches in specific fields;
- The role of genetic factors in determining human behaviour;
- Pre-natal and peri-natal studies;
- Child-rearing practices;
- Intervention programme for modifying cognitive development;
- Language development;
- Competence studies;
- Control of aggressive behaviour;
- Mental health of children;
- Family dynamics;
- Parent counselling;
- Peer teaching;
- Problems, needs and aspirations of the girl child;
- School effectiveness;
- Home based models of child education.

To conclude, we need to develop an *Indian perspective* of the child and adolescent development. Here, the *Indian* should represent the indigenous perspective—one which has an emic orientation. Efforts should be made to delineate the trend of development of the children, so that a wholistic picture of the Indian child may emerge.

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Information Integration Model: A Strategy to Study Cognitive Growth

B.C. KAR AND U.N. DASH

DURING the last decade the Information Integration Model (IIM), a comprehensive theory of intelligence, has evolved (Das, 1984, 1989; Das & Jarman, 1988; Naglieri, 1989, Naglieri & Das, 1988) integrating research in neuropsychology (Luria, 1966, 1973) and cognitive psychology (Atkinson & Shiffrin, 1968; Broadbent, 1981; Hunt, 1980). The model attempts to understand the nature of intelligence in relation to the organisation of information processing activity of the brain conceptualised by Luria (1966, 1973). It discards the concept of "g" and the 'IQ'-friendly psychometric approach to intelligence as atheoretical, misleading, unproductive and emphasises instead a process approach to intelligence (Das, 1989). Operationalising intelligence in information processing terms, it has developed a system of cognitive assessment to measure basic cognitive processes underlying all cognitive activity.

The IIM has been proposed as a promising alternative to existing models of intelligence (Das & Jarman, 1988). In view of "the lack of satisfactory theories of child development"

(Heatherington & McIntyre, 1975), the purpose of this paper is to examine the usefulness of the IIM as a strategy to study cognitive growth.

Functional Organisation of the Brain

On the basis of syndrome analysis and clinical observation of brain damaged patients, Luria has identified three functional systems of the brain and has identified the role played by each in complex cognitive activity. They are (1) the arousal and attentional system involving the brain, stem, reticular system and areas of the limbic system and hippocampus, (2) the information reception, analysis and storage system involving occipital, parietal and temporal regions of the cortex and their underlying structures stemming from the thalamus, and (3) the programming, regulation and verification of activity system involving the frontal lobe and its projections from the remainder of the cortex. The three functional systems are not hierarchical. But each of these systems is hierarchically organised consisting of three cortical zones; the primary zone that receives and sends

impulses to the secondary zone, which processes information and prepares plans and programs, and the tertiary zone or the zone of overlapping responsible for most complex forms of human cognitive activity (Luria, 1973). All mental processes in general and conscious mental activity in particular require the combined, concerted and integrated processing by the participating functional systems of the brain. Luria has emphasised the role of speech processes in all forms of cognitive activity.

The Information Integration Model (IIM)

On the basis of Luria's observation of the functional organisation of the brain, the IIM provides a framework for cognitive processing. Although the model is based on neurological functioning, it goes beyond it by extending and integrating it with current research in experimental cognitive psychology. Whereas the Luria's model is specific to describe neuropsychological functioning, the IIM is more appropriate for describing cognitive processing.

Considering intelligence as a cognitive construct, the model goes on to define it as the integrative function of all cognitive processes that may be broadly classified as attention-arousal, coding of information (simultaneous and successive processing) and planning. Planning is described as the essence of intelligence "as the cognitive processes required for planning have a relatively higher status in intelligence" (Das, 1966).

Attention-arousal: Attention-arousal refers to a host of cognitive functions and their relationship is complex. A distinction has been made between arousal and activation (Pribram & Mc Guinness, 1975), both of which are involuntary attentional function. While arousal is equivalent to the orienting reaction, activation refers to readiness for action. In voluntary attention, arousal and activation are coordinated

by effort. Effort represents the magnitude of interaction between the first and the third functional unit signifying voluntary control of behaviour. The effect of arousal and activation on cognitive performance has been extensively studied indicating changes in swiftness and accuracy in vigilance tasks (Parasuraman, 1983). Attentional components include alertness, selectivity, and processing capacity (Posner & Boies, 1973). Alertness is reflected in vigilance. In selective attention, the individual discriminates between the relevant and the irrelevant stimuli. Individual differences in selective attention are ascribed to differences in processing capacity. Selective attention measures include physical and name identity tasks developed by Posner (1978), the Stroop Test and incidental learning. According to Das (1989) selective attention which borders on planning is the most significant characteristic of attention in relation to intelligence and a comprehensive assessment of cognitive function must include measures of attention.

Information coding : Simultaneous and Successive coding : Coding refers to the reception, analysis, transformation, organisation, interpretation and storage of information. Most of the cognitive psychology deals with the coding functions. Current tests of intelligence represent measures of information coding. According to the IIM, coding of information may be categorised as of two types or modes, i.e. simultaneous and successive processing. According to Das (1986), "Information arriving in discrete units may be processed simultaneously or successively. The former entails the arrangement of information in a simultaneous quasi-spatial array so that the relationship between the discrete pieces of information is surveyable. An example of such a processing is seen in copying a familiar drawing such as a cube. In successive processing, the discrete information is arranged in a sequence or order; it is essen-

tially a temporal order. Appreciation of syntax is a good example of successive processing as is also the memory for the order in which a list of words or pictures is presented" (p. 55).

Both types of processing are available to the individual for all forms of task performance. The selection of either or both depends on (a) the demands of the task, (b) the individual's habitual mode of processing, (c) the interaction of the preferred mode and the task, and (d) the developmental level. Simultaneous and successive processing occur at all levels of cognitive activity : perceptual, amnesic and conceptual. Measures of simultaneous processing include RCPM, Figure Copying, and Memory for Designs. Examples of successive processing measures are Auditory Serial Recall, Digit Span, and Auditory Sequential Memory.

Planning : Planning is the central concept in the IIM, and Das asserts over and over again this uniquely human function as the essence of intelligence. Considering that standardized intelligence tests measure only the coding functions and that "a wide range of competence in judgment and decision making may be found, given the same amount of intelligence as measured by standardized tests", he observes that there is more to intelligence than "gathering and storing information" (Das 1984, p.2).

Planning entails making decisions, evaluations and judgment. Following Hunt's (1980) consideration of intelligence, three aspects of planning has been distinguished which include structure, process and knowledge base. The structural base of planning is the frontal lobe, specifically the prefrontal area, "which has no sensory or motor functions to speak of, occupies about one-third of the brain and is the last to develop in the course of evolution" (Das, 1984, p.2). In Luria's functional organisation of the brain, this is the third functional unit responsible for general regulation and control of conscious activity. The process of planning

underlies "such activities as the generation, selection and execution of a plan or program, evaluation of one's own behaviour and others' and the response tendency to act on the basis of such evaluation" (Das, 1984, p.35). Knowledge base includes a person's accumulated habits and predispositions. Measures of planning include Visual Search, Matching Numbers, and Planned Composition among others.

The concept of planning may be related to the conceptual development of 'strategy' in cognitive psychology. Introducing the term, Bruner defined strategy as a pattern of decision in the acquisition, retention, and utilisation of information that serves to meet certain objectives" (Bruner, Goodnow, & Austin, 1956, p.54). Ever since the term has been ubiquitously used in psychological nomenclature. An extension of the strategy concept is found in Simon's (1979) concept of 'production systems'. Strategic variables have received utmost importance in models of selective attention and search (Atkinson & Shiffrin, 1968 ; Norman, 1976; Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977 ; Treisman & Gelade, 1980; Treisman & Gormican, 1988). Planning has been related to a general theory of behaviour (Miller, Galanter, & Pribram, 1960). Recently planning has been operationalised as search integrating neuropsychology and cognitive psychology (Kar, 1989).

Knowledge base: The IIM assumes that the cognitive activity of an individual must be assessed, evaluated, and interpreted with reference to his "learnings and memories, attitude and orientations, inborn capacities and energy level which interactively intervene in the interpretation of reality as well as the structure and content of (his) thought...Knowledge depends on instruction, experience, and reflection on what has been acquired. It also includes knowledge based on the entire historical experience of mankind" (Das, 1986, p.8). Das following

Vygotsky emphasises speech in the evolution and development of the knowledge base.

Empirical Evidence for the IIM

Das and his students have presented strong evidence for the existence of the theoretically defined cognitive processes, attention, coding and planning across age, IQ, SES, caste, and cultural groups and schooled and unschooled children (Das 1973, 1984, 1987, 1989; Das & Dash, 1990; Das, Kirby, & Jarman, 1975, 1979; Das & Snart, 1982; Dash & Das, 1984a, 1984b). Most research has been directed at the study of coding and planning processes revealing the relative invariance of the information processing modes with remarkable consistency suggesting "universality of the principles represented in the IIM... and the efficacy with which the model can be used to describe cognitive processes" (Das & Varnhagen, 1986, p. 130).

A second line of investigation concerns the interaction between different modes of processing and various cognitive skills such as language, reading and mathematics using normal and learning disabled children (Das & Varnhagen, 1986). These studies have extended the utility of the model to understanding processes underlying academic skills and educational performance. For example, it has been found that while successive processing is more important in the development of initial reading skills such as word decoding and vocabulary comprehension, simultaneous processing plays a critical role in advanced level reading skills involved in narrative and expository prose comprehension. These studies also reveal differential processing deficiency in less and more severe learning disabled children. Several studies have investigated the relationship between cognitive processes and school achievement in various subjects (Kar, Patnaik & Mishra, 1990;

Kirby, 1984; Kirby & Ashman, 1984; Kirby & Biggs, 1980).

A third approach has been to examine the cognitive processes defined by the IIM in relation to existing theoretical concepts predominating the study of cognitive development and basic processes emphasised in current research in cognitive psychology. In relation to Piagetian concepts, it has been found that concrete operational tasks involve simultaneous processing. However, while schooling helps develop simultaneous processing skills, Piagetian tasks are unrelated to skills learned at school (Dash & Das, 1984b; Mwamwenda, Dash & Das, 1984).

Kar has attempted to relate the concept of planning to selective attention and search processes (Kar, 1989). These studies have revealed the intimate relationship between individual differences in strategy deployment in selective attention, search, and planning processes.

Besides, a few studies have been done to explore the malleability of the cognitive processes using dynamic assessment techniques (Carlson & Wiedl, 1988; Feuerstein 1980). These studies (Das, 1984; Kar, 1989; Mohapatra, 1990) provide a promising lead for remediation of inefficient processing by strategy training aimed at augmenting the planning process. Speed of Visual Search latency, an index of planning efficiency has also been found to decrease as an effect of manipulating structural variables inherent in the task (Mohanty, 1990; Nanda, 1990).

The above studies have been a part of a comprehensive program of research designed to clarify theoretical issues and to verify the heuristic value of the IIM in studying cognitive function. A few studies have looked at developmental changes in these functions. These studies will be discussed in the next section after examining the implications of the IIM for a strategy to study cognitive growth.

Current Research in Cognitive Growth and the IIM as an Alternative Approach

The current scene in research in intellectual development is dominated by the psychometric approach and the biologically inspired structural model of Piaget. The psychometric approach to intelligence emphasises the 'g' and thus the IQ as the summary ability, and assumes it to be fixed, static and immutable. It does not examine the processes underlying these abilities and their amenability to environmental and organismic flexibility, nor to their possible modification. This dismal state of affairs has led some psychometricians to emphasise a need for integration of abilities and psychological processes (Cronbach, 1970; McClelland, 1973; Carroll, 1976).

On the other hand, Vygotsky's criticism (Vygotsky, 1962) of the soundness of Piaget's assumptions overlooked by developmental psychologists have been evident in current research in cognitive development. As early as 1932, Vygotsky wrote:

"Piaget's work suffers from the duality...(stemming) from the sharp contradiction between the factual material of science and its methodological and theoretical premises....The duality is reflected in the incongruity between these theoretical structures with their metaphysical idealistic overtones and the empiric basis on which they are erected" (Vygotsky, p. 10).

With these observations Vygotsky (1962) concluded that "the developmental uniformities established by Piaget apply to the given milieu, under the conditions of Piaget's study. They are not laws of nature but are historically and socially determined" (p. 23). Recent research in cognitive development have supported Vygotsky's observations (Brown, 1977; Bryant & Trabasso, 1971; Lindberg, 1980). Reviewing Piagetian research, Klahr & Wallace (1972) wrote:

"A gap exists between the hypothetical structures and processes which form the basis of the theory and the level of performance as represented by the experimental data. This arises from the fact that the theoretical account is presented at a level of generality which makes it uncertain as to whether it is sufficient to account for the complex and varied behaviour which it purports to explain. Indeed, there is no way at all of determining what would be its consequences on the level of performance. A much more detailed account of the functioning of the specific processes is necessary before these uncertainties can be dispelled" (p. 154).

The problem of Piagetian theory comes from its inability to specify processes that characterise the transition from one to the other stage of development. Those Piagetian theorists who have taken recourse to an information processing approach have dwelt in a metaphorical level (Flavell & Wohlwill, 1969). Piagetian theorists have been increasingly interested in dynamic process models, more specifically in self-regulating mechanisms (Inhelder, 1972). Piaget's interest in structure and the evolution of concepts have made some psychologists to look askance at his theory for its 'sublime disregard for process'.

This state of research in cognitive growth has prompted us to recommend the IIM as an alternative strategy. The model has several advantages: (1) The model is based on a solid theoretical foundation, Luria's theory of the functional organisation of the brain, and integrates it with current concepts in cognitive psychology. A theory based model provides the blueprint for the generation, manipulation, understanding, interpretation, and prediction of behaviour in a meaningful context. (2) The model has been the basis of theoretically derived measures of cognitive assessment without resorting to premonitions of what functions a test of

intelligence might include. The construct validity and the universality of the cognitive processes have been established across age, IQ, and culture. (3) The model has specified the cognitive processes and provides the matrix of the pattern of their interaction and their possible role in manifold cognitive activity. (4) It provides us with concepts to explain individual, developmental, and cultural differences in cognitive activity. (5) The model also prescribes methods and procedures of remediation and training to ameliorate processing dysfunction.

Besides, if we adopt an information processing approach to intelligence and its development, we must understand how information is processed in the brain. As processing information is the function of the brain, we must understand what transpires while information is being processed, and how it occurs in the brain. To the skeptic it may be reminded that "psychological problems may not be solved by making measurements in the brain but some more modest aim may be accomplished; a psychological analysis that can stand up to the neurological evidence is certainly better than one that cannot" (Miller, Galanter, & Pribram, 1960).

Considering the IIM as a strategy to study cognitive growth, we have conducted some studies as a first step to explore and illustrate the usefulness of the model in understanding developmental changes in cognitive activity. These studies are described in brief in the following:

Study I: Development of Visual Search as a Function of Mapping Condition, Field Density and Field Stimuli (Kar & Dash, 1988).

Search may be considered as a paradigm for all cognitive activity and planning has been operationalised as search. (Kar, 1989). Search has been in the forefront of research in cogni-

tive psychology (Shiffrin & Schneider, 1971; Sternberg, 1984; Treisman & Gelade, 1980; Treisman & Gormican 1988). This study was designed to examine the effect of mapping condition (automatic and controlled search), field density and field stimuli on the efficiency of search performance and their relationship with the developmental level of the subjects. Ninety subjects, thirty each from Grades five, seven, and nine were administered Visual Search Task, a marker test of planning. Results revealed that (1) auto search was faster than controlled search, though both improved with the grade level of the subjects, (2) field density affected performance in controlled but not in auto search condition, (3) the grade and density interaction was significant only for controlled search, and (4) field stimuli (pictures, letters and numbers) had a significant effect on the efficiency of both auto and controlled search. In high density controlled search, search was slower for pictures than for letters. In auto search, pictures were easier to search among numbers than numbers among pictures. This experiment suggested that cognitive operations involved in search and their sensitivity to developmental changes are complex and must be related to the individual and developmental differences in information coding.

Study II: Developmental Changes in Matching Numbers and Its Relationship with Naming (Kar & Dash, in press)

The objective of the study was two fold : (1) to verify the findings of Study I using a different planning task, i.e., Matching Numbers, and (2) to find out the effect of naming speed on number matching performance.

Two studies were conducted. In study I, 90 children, 30 from each of Grades five, seven, and nine were given the Matching Numbers Test (MNT), a marker test of planning. Results revealed that developmental level did not af-

fect number matching performance. In study II, a comparable number of children selected from the same grades were given the MNT, a task of number naming and were assessed for their matching strategy. Results revealed that faster naming was significantly related to faster MNT performance especially for high density numbers and that a specific matching strategy had facilitating effect on number-matching speed. The studies suggest that (1) apparently similar search tasks may elicit varied information processing demands and may be differentially sensitive to development, and (2) internalised speech processes like naming are intimately connected with planful search operations.

Study III: *Development and Differentiation of Simultaneous, Successive and Planning Processes* (Dash & Mahapatra, 1989)

The studies reported earlier indicated the importance of information coding in search performance and its development. The present study was designed to examine the development and differentiation of planning and the two modes of information coding, simultaneous and successive processing.

Sixty children from Grades there, five and seven took marker tests of simultaneous and successive coding and planning process. Results indicated age and grade related changes in the development of coding and planning but grade differences were not as prominent for successive as it was for simultaneous coding and planning. While the two coding processes got progressively differentiated with increasing age and educational experience, the distinctiveness of coding and planning functions were not clear. Planning in higher grades was found to rely more on simultaneous than successive coding.

Study IV: *Development of Attention, Coding and Planning* (Kar, Mishra, & Patnaik, 1990)

The pattern of relationship among cognitive processes during development may not be fully understood without the knowledge of their relationship with attentional processes and their concomitant development. To study the inter-relationship among these processes, 160 subjects, 40 from each of the Grades one, four, seven and nine were administered marker tests of selective attention, simultaneous and successive processing and planning. Results revealed that (1) performance in all cognitive measures improved with increasing age and grade, (2) successive processing was found to have been differentiated before, simultaneous processing and planning, and (3) measures of selective attention and planning were found to be highly related across grades. A further analysis also revealed sex differences in simultaneous processing and one of the planning measures with girls showing better performance than boys. The results of this study provide evidence for a sequential model of cognitive development and qualitative changes in the efficiency of cognitive processing with development.

The objectives of research in cognitive growth are to (1) identify the mechanisms of change in cognitive function, (2) specify the processes underlying these mechanisms and their interrelationships, (3) provide age related norms standardized in various cultural contexts to evaluate individual performance, and (4) provide procedures of remediation in cases of processing dysfunction. The IIM envisages these objectives and initial work has shown to provide promising lead to attain these goals. Empirical evidence exists to substantiate its claim to provide a viable alternative strategy to study cognitive growth.

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Schooling and Information Processing: An Empirical Study with Santal Tribal Children in Orissa

SUDHAKAR RATH

THE POSITIVE effects of schooling on academic and scholastic achievements as well as on crystallised tests of intelligence have been well documented in the psycho-educational literature. Schooling has also been found to enhance the traditional psychometric fluid intelligence of children as evidenced from the gain in I.Q. points up to 5 or 7. This gain in I.Q. is evidenced more in primary and secondary school years compared to college years. Learning processes involved in many school activities do affect the formation of the cognitive strategies needed for successful performance on general ability tests. Although the superiority of schooled children over non-schooled has been documented in many empirical studies, several valid criticisms have been advanced both conceptually and methodologically. Madaus, Airasian and Kellaghan (1990) reviewing studies on schooling effects concluded that while suggesting importance of schooling these studies failed to control for operation of several other potential confounding factors (such as

age, language, test wiseness, socio-demographic variables etc.) which might have affected the children's performance. Moreover statistical control (i.e. covariance analysis, multiple regression) may over or under correct for correlates of schooling effect, leaving us in doubts as to its true effects. Ability in children develops due to incidental and observational learning independently of schooling and influence of schooling is nil in "pure" tests of fluid abilities and increase in test scores only may be due to age factor (Horn, 1978).

Linguistic competence factor has been found to be major facilitating factor in school achievement and hence acts as major confounding variable. Knowledge and information transmitted and acquired in the school are predominantly through the language without use of natural contexts. On the contrary the child who has never been to school learns through observation in the natural contexts or surroundings without detailed verbal formulation or practice. Due to heavy emphasis on

internal and external verbalisation through language training and use, it is not surprising that schooled children are more capable of describing general rules of problem solutions, abstraction and generalisation compared to their non-schooled counterparts (Scribner & Cole, 1973, Olson, 1977; Das & Dash, 1984. Ashton (1975) point out that school children speak "ideas about ideas" being forced to learn abstract ideas, generalised rules through intensive language training. Hence, superiority of schooled children over non-schooled has been largely due to linguistic competence. The literature is very unclear and very few studies have compared the cognitive performance of schooled Vs. non schooled children independent of linguistic competence. The present study aimed at comparing the cognitive performance of schooled versus non-schooled children at a stage when the acquired linguistic competence and its mediational role on the subjects is at a minimum level and schooling is in a primitive stage. Secondly, successful performance on cognitive problem solving tasks used in the study did not depend on linguistic competence at all.

As Rogoff (1981) has rightly pointed out that a large number of studies relating to schooling and cognition have been motivated by an interest in trying out standard intelligence tests and other traditional tests and tasks with an emphasis to measure what ability, capacity or knowledge is available with the subjects. These studies never looked at the problem from definite theoretical perspectives for indepth study or understanding of cognitive processes in terms of how cognition is organised, utilised, and the manner or mode of processing information for solving problems. The mental assessment in traditional psychometric way has limited value. As a result there has been a shift from the study of abilities to an enquiry into processes and individual strategies relevant for particular problem situation.

The tasks and tests used to measure the intelligence or cognition of individuals heavily depended upon tasks which progressively increase in difficulty level (from very easy task to very difficult task.) This approach of mental measurement has limited value in tapping multidimensional range of cognitive behaviour. Very few attempts have been made in the literature to study the impact of schooling in bringing about changes in the cognitive processes such as reflective-impulsive and simultaneous and successive information processing dimensions over and above what can be expected from maturation alone. Hence, the major objective of the present study was to examine whether schooled children would perform at a higher level or not on reflective-impulsive and simultaneous-successive processing tasks that require the differential information processing strategies independent of traditional intelligence factor (i.e, I.Q.).

Methodology

Characteristics of the sample

The sample consisted of 50 primary tribal school children (Santal Tribal) in grade-2 and 50 non-schooled tribal (Santal) children in Mayurbhanja district of Orissa state. The children of both the groups were matched on age and traditional I.Q. (Raven's Coloured Progressive Matrices). The demographic characteristics of these villages were highly homogeneous. Parents of these children came from low socio-economic status families and earn their livelihood from marginal farming and from daily labour. The literacy rate of the villages was less than 20 percent. The villages are underdeveloped and no modern facilities for agriculture etc. The children who were not attending the school were asked to help their parents in the field or household work. The school con-

sists of thatched houses consisting of two or three rooms. Due to poor training of teachers and lack of facilities in the school the quality of teaching-learning conditions in the school was very poor and primitive in nature. The teaching was carried out through rote learning method.

Assessment Instruments

All subjects were administered Raven's coloured progressive matrices, matching familiar figure test, Figure Copying Test and Digit Span forward and backward one by one in a randomized fashion.

Raven's Coloured Progressive Matrices (RCPM): (Raven's 1983) is a test widely used as a non-verbal test of reasoning ability. The correlation between RCPM and other intelligence tests is quite high. The tasks were visually presented and the task of the subject was to complete the pattern by selecting the appropriate match from a series of given alternatives. The schooled and non-schooled groups were matched in RCPM measure.

Matching Familiar Figure Test (MFFT-20): The MFFT is a complex match to sample task originally developed at Harvard University consisted of 2 practical and 12 test items. Cairns and Cammock (1978) developed a more reliable version of MFFT 20 which was used in this study. Each item contains a standard pictures of a common object (e.g a flower) and six comparison pictures, one of which is identical to the standard and the other five differing from it in a minute and not easily identifiable detail. The task of the child is to select the picture which exactly matches the standard. A maximum of six errors per item is allowed. Latency to first response on each of the items and total number of errors were

recorded on all twenty items. This task is used to measure reflective-impulsive information processing in children.

Figure Copying: This test was first developed for measuring developmental readiness in primary grades. Das, Kirby and Jarman (1979) used this test for measuring simultaneous information processing in children. This task requires the child to copy 10 drawing forms which increase in difficulty and are visible to the child at all time. The reproduced drawing of the child is scored as 0, 1 or 2 according to the degree of correctness of reproduction. In scoring the geometrical relations and proportions are emphasized.

Digit Span: Digit span forward and digit span backward constituted the test. The forward series begins with three digits and continues to a maximum of nine digits with increasing length where as the backward series begins with 2 digits. The experimenter reads to the child the digits of the series. If the child is unable to recall correctly any series of digits he is given a second series in trial No. 2 with identical length. When the child fails to recall correctly any one of the series in both trials, the test is discontinued. The child scores 2 points if he posses both trials, 1 point if he possess only one trial and 0 if he fails to pass any of the trials. This test has been used to measure seccessive information processing in children, *Procedure:* The 50 schooled and 50 non-schooled tribal children who were matched in I.Q and other possible socio-economic variables were administered individually MFFT- 20, Figure Copying and Digit Span tasks in a random order. All the children were tested by a tribal teacher who worked as a research assistant in the project. Instructions were given in their tribal language which has no written script. After the testing was completed each child's position on

Reflection-Impulsivity dimension was determined on the MFFT errors and latency scores following Salkind and Wright's (1977) Impulsivity ("I") criterion. The traditional double-median split procedure using errors and latencies artificially dichotomizes the above continuous variables and typically yields four groups. Such dichotomization squanders valuable information and results in substantial loss of statistical power. Second, using correlated variables of errors and latencies as two independent factors in an analysis of variance results in confounded main and interaction effects. The new "I" score procedure followed in the present study required the transformation of latency

and error scores, into a standard score for errors and latencies representing a univariate continuous variable. The "I" (Impulsivity) score is defined as the standard score for errors minus the standard score for latency ($I = Z \text{ error} - Z \text{ latency}$). Accordingly children with positive I scores formed the Impulsive group and those with negative "I" scores formed the reflective group.

Results

The descriptive statistics obtained on various measures have been reported in the Table-1.

TABLE 1

Descriptive data (Means and SDs) on MFFT error, latencies, Figure Copying and Digit Span scores for schooled and non-schooled Santal tribal children.

Variables	Schooled		Non-Schooled	
	Mean	SD	Mean	SD
MFFT error	28.78	23.40	43.3	32.2
MFFT Latency	11.7	4.4	7.4	4.3
Figure Copying	11.5	5.3	7.3	3.4
Digit Span Forward	6.1	2.3	4.9	3.7
Digit Span Backward	4.8	3.1	3.9	1.4

The table1 shows that the means and SDs for MFFT total errors for schooled and non-schooled children were 28.78 (SD=23.40) and 43.3 (SD=31.2) respectively. The means and SDs for MFFT mean latencies for schooled and non-schooled children were found to be 11.7 (SD=4.4), 7.4 (SD=4.3) respectively. In case of figure copying a measure of simultaneous information processing the means and SDs

for schooled and non-schooled children were found to be 11.5 (SD= 5.3) and 7.3 (SD=3.4) respectively. The means for Digit Span forward and backward a measure of successive information processing in case of schooled and non-schooled children were found to be 6.1, 4.8, 4.9 and 3.9 respectively. The SD for the above measures were found to be 2.3, 3.1, 3.7 and 1.4 respectively.

TABLE 2

One way ANOVA of Schooled and Non-Schooled Santal Tribal Children for MFFT errors, latencies, Figure Copying and Digit Span scores.

Variables	Sources	Sos	Df	Ms	F
MFFT error	Between	5329	1	5329	71.4***
	within	7309	98	74.6	
MFFT latency	Between	365.1	1	365.1	11.2**
	Within	3201.6	98	32.7	
Figure copying	Between	66.62	1	66.62	4.56*
	Within	1401.4	98	14.3	
Digit Span Forward	Between	3.61	1	3.61	1.1
	Within	309.68	98	3.61	
Digit span Backward	Between	2.09	1	2.09	1.2
	Within	160.72	98	1.68	

*** $P < .001$ ** $P < .01$ * $P < .05$

Since there were several dependent measures, preliminary multivariate analysis of variance (MANOVA) was conducted. The dependent measures included scores on MFFT tasks, figure copying and Digit Span forward and backward. The MANOVA indicated that the Hotelling Lowley Trace was statistically significant, F approximation (5.94) = 13.04, $p < .01$. Of the five dependent measures three were found to reach statistical significance in the univariate analysis of variance. Table 2 represents the SOS, df, MS and F ratios for the schooled and non-schooled groups of children.

Table 2 shows that on the MFFT errors the schooled children committed significantly less errors, F (df=1, 98) = 71.4 $P < .001$ and had significantly higher latencies, F (df=1,98) = 11.2, $P < .01$. Schooled children committed less errors and responded more slowly to items in MFFT test compared to their impulsive counter-

parts. The Pearson "r" computed between MFFT errors and latencies yielded significant negative relationship ($r = -.56$, $P < .01$). This finding demonstrated that children who deliberately takes more time and thinks about complex tasks while processing information are likely to be more correct compared to their counterparts who take less time to process information and quickly respond to complex task without much thinking.

When schooled and non-schooled children were compared in figure copying task, a measure of simultaneous information processing the data yielded statistically significant difference, F (df=1,98)=4.56, $P < .05$ between these two groups. The schooled children did better performance than the non-schooled children. However, when the schooled and non-schooled children were compared on digit span forward and backward tasks, a measure of successive

information processing, no reliable difference could be obtained either in digit span forward or backward although the schooled children scored somewhat higher in both the tasks. The findings suggested that schooled and non-schooled children performed equally well on digit span tasks.

The chi-square test was conducted in order to find out the association between schooling and reflective-impulsive information processing. The question was whether schooling factor was independent of reflective-impulsive processing strategy. The data revealed that reflective-impulsive processing was very much dependent on schooling factor. The obtained χ^2 value was 23.19 which exceeds the given table value at .01 level of significance. Of 50 schooled children, 35 were found to be reflective and 15 were impulsive children whereas out of non-schooled children 11 were reflectives and 39 were found to be impulsives. This finding suggested that schooling has fostered reflective processing strategies in the children.

Discussion

The data obtained in the present study yielded several interesting results. The schooled children out performed their non-schooled counterparts in the MFFT test, a measure of reflective-impulsive information processing. The schooled children committed less errors by taking considerably more time. Those children discovered the right solution hypothesis in a problem solving situation which contained high response uncertainty due to high degree of similarity among the solution hypotheses. As a result, the schooled children possessed superior evaluation strategy known as reflective processing compared to their non-schooled counterparts who followed impulsive processing, an inferior processing strategy.

Data revealed that while 35 schooled children were found to be reflectives only 11 non-

schooled children were found to be reflectives. On the contrary while 15 schooled were found to be impulsives, 39 non-schooled children were found to be impulsives. These findings implied that as the tribal children undergo schooling experience their information processing strategy also undergo changes and even the most primitive schooling experience nurtured reflective problem-solving strategy in the children as evidenced from the present study. The developmental literature reviewed by Rath (1987) suggested that as children grow older they become more and more reflective and schooling is one of the important factors which facilitates the development of reflective problem-solving behaviour in children.

The data in the present study also revealed that in case of figure copying, a measure of simultaneous processing the tribal schooled children out performed their non-schooled counterparts. The superiority of schooled children over their non-schooled counterparts have also been documented by Dash and Das (1984) who reported that simultaneous and successive processing develops much faster in schooled than non-schooled children. As the successive years of schooling increases, the difference between schooled and non-schooled becomes wider and wider favouring the former group. Although in case of successive processing the present study failed to support the above contention, it must be noted that the children had hardly one year of very impoverished schooling experience which might have failed to produce the desired result. While some studies conducted by Stevenson, Parker, Wilkinson, Bonnevaux and Gonzalez (1978) reported that schooled children differed from their non-schooled counterparts only after a few weeks or months of schooling, the other studies reported that differential impact due to schooling do not emerge until about grade 3 or 4 (Owoc, 1973). Horn (1978) viewed that

cognitive ability develops due to incidental learning independently of schooling and the effects of schooling is nil in "pure" tests of ability like fluid factor of intelligence. Any increase in test scores is only due to age factors. Coleman, Hoffer and Kilgore (1982) were also skeptical about the absolute effects of schooling in children. On the contrary in a very well designed study by Cahan and Cohen (1989) showed that schooling had definite positive influences in the formation of cognitive strategies needed for successful performances on general ability tests independent of age factor. Our findings supported the theory and findings of Cahan and Cohen (1989) and Stevenson *et al.* (1978) and contradicts the theoretical formulations and findings reported by Coleman *et al.* (1982) and Horn (1978).

The teaching learning conditions of our sample schools were very poor and impoverished. In spite of this poor equality of schooling the tribal schooled children excelled in cognitive processing strategies in comparison to their non-schooled tribal counterparts at a given point of time when the linguistic factors played very little role. Hence, it is concluded that even primitive form of schooling in the remote tribal areas did

seem to accelerate basic cognitive processes and functions such as reflective processing and simultaneous processing. A larger effects of schooling may be obtained if we will compare non-schooled and schooled children drawn from schools with modern and improved standards of instruction, curriculum and teaching learning aids. However, the effects of better quality of schooling will be confounded with many other factors that will covary with it. For example, children who will come to better quality schools, come with their better socio-economic and other demographic variables as well as other psycho-social variables that will contribute substantially independent of schooling and would be very difficult to control too. So far as this piece of research is concerned many such potential variables do not confound the findings and findings throw light for conceptualizing cognitive consequences of schooling in the framework of information processing model independent of traditional, I.Q. Although the present findings highlight the cognitive consequences of schooling nothing can be said about the exact dynamics of schooling effects and future studies must aim at unravelling the mystery of such dynamics.

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SES and Time-related Effects of Pre-school Education on Cognitive Abilities

KASTURI JACHUCK

EARLY CHILDHOOD education programmes have been used as instruments for facilitating cognitive growth and promoting school readiness. Such programmes draw their rationale from the critical period concept which, even in a weak form, emphasises the importance of early experience in human development. Beginning with Hebb's classic work, there has been a flurry of research activities aimed at determining the effects of variation in early environment on later development (White, 1975; White, Caban & Attanucci, 1979). These studies have found strong evidence which suggests that there is rapid and accelerating development during pre-school years and as such the child is most vulnerable to environmental influences. Particular emphasis has been given on certain aspects of child's environment which are instrumental in advancing his cognitive functioning. It has been observed that variation in early experience is directly related to the appropriateness of concept development. Thus the growing child needs a stimulating and organised environment if his relation to the world is to

be sensible at all.

The pre-school education programme is a step in this direction. Its aim is to foster physical, emotional, social and intellectual development of young children. The pre-school is the cradle of planned, supervised education outside the home. Usually the formal pre-school environment is marked by its better teaching methods, teacher's dealing with the young pupil, the emotional climate and availability of learning materials of the children. Several attempts have been made to examine whether formal pre-school education has a positive effect on children's development. The general conclusions are as follows: (1) Children attending pre-school interact more with peers, (2) they are more socially competent, more self-sufficient and independent (Flowler, 1978), more verbally expressive and more knowledgeable about their social world (Clarke-Stewart & Fin, 1983), exhibit more task-persistence, leadership and goal direction. (Ramey & Macpheedyeates 1982) and show significantly more gain in I.Q. scores (Lazer & Darlington, 1982).

There are few Indian studies which have attempted to study the effects of non-formal pre-schools such as Anganwadis opened under Integrated Child Development Services Scheme. These studies have revealed that children attending anganwadis scored higher in all cognitive tests than the non-attenders. In another study Mohanty and Mohanty (1985) found that the pre-school children performed significantly better than the unschooled ones in all the measures of intellectual and linguistic abilities. Thus most of the Western and Indian studies have revealed that pre-school education has a positive effect on children's development.

The question then is: do the pre-school programmes have equal impact on the cognitive abilities of children irrespective of their social class belongingness? Social class is a broadly defined variable that is related to many environmental factors and that may affect intellectual performance. Evidences from cross-cultural studies indicate that early home environmental conditions affect the development of intellectual abilities. Whiteman and Deutsch (1968) found significant association between Low SES and lower reading skill. A child born in a family with a particular socio-economic background contributes to further development and acquisition of cognitive skills. Chatterjee (1977) in an extensive study found that family background variable like parental income, occupation were some of the more important factors for the development of children. Studies also indicate that poor children's cognitive ability is retarded by unfacilitatory early home experience due to belonging to low SES family (Coleman, 1968; Rath, Dash & Dash, 1979).

It thus seems that pre-school programme may have a facilitatory impact on the cognitive abilities of low SES children but the same boosting effect may not be noticed for children from middle SES group since the middle class home

provides the same type of stimulating environment found in formal pre-school situation. Parents belonging to high SES families are well aware of their role in shaping the mental abilities of their children during the critical period of life. As such, they try their best to provide an enriched and stimulating environment during the early phases of life. For the success of pre-school education programme, it is necessary to have a clear understanding about the relationship between pre-school experience, class belongingness and cognitive abilities. Therefore, in study 1 an attempt was made to examine the effect of class belongingness and pre-school education on the cognitive abilities of children.

Study I

METHODOLOGY

Sample : 80 Children in the age group of 3 to 5 years were selected for the study. Half of the children had no formal pre-school education whereas the remaining half had one year experience in a pre-school programme. These two groups of children were taken from two SES levels-high (monthly income of the family above Rs. 1500/-) and low (monthly family income below Rs. 700/-). Thus, there were four sub-groups of children. 20 in each group with equal number of boys and girls.

Tests and Procedure: All the subjects were given a non-verbal test of reasoning (Progressive Matrices, Raven, 1938), a Test of Clustering ability (Jachuck & Mohanty, 1974), an associative memory test (Digit Span Test, Wechsler, 1949) and a Figure Copying Test (Hig & Ames, 1964). The tests were administered in two different sessions and the sequence of administration of tests were same for all the children.

Results and Discussion

Results of all the four tests taken together reveal a general picture in respect of cognitive abilities as affected by pre-school experience. Mean and standard deviation values for all the measures for the four groups of children have

been given in Table 1. Mean scores of four sub-groups in each test, except free-recall, reveal a hierarchy of the rich pre-school children at the top, the rich non-pre-school children and poor pre-school children at the middle and the poor non-pre-school children at the bottom position. It suggests that the high SES non-pre-

TABLE 1

Means And Standard Deviations Of Scores Of Different Groups On Different Experimental Tasks.

Variables		High SES Children		Low SES Children	
		With pre-school experience (n=20)	Without pre-school experience (n=20)	With pre-school experience (n=20)	Without pre-school experience (n=20)
Ravens Coloured	M	15.70	13.90	12.50	10.70
Progressive Matrices	SD	2.92	2.17	2.78	3.38
Figure Copying	M	13.2	10.75	7.70	5.75
	SD	3.14	3.14	2.26	1.76
Clustering	M	1.62	1.58	1.43	1.33
	SD	0.53	0.28	0.07	0.43
Free Recall	M	12.25	14.35	14.05	10.15
	SD	1.09	1.33	1.12	2.22
Digit Span (Forward)	M	5.40	4.95	4.65	4.35
	SD	0.58	0.59	0.73	0.57
Digit Span (Backward)	M	2.10	1.45	1.20	0.70
	SD	0.30	0.71	0.62	0.77
Digit Span (Total)	M	7.50	6.40	5.85	5.05
	SD	0.67	1.24	1.34	1.16

school children have compensated for their lack of pre-school experience by belonging to high SES.

The scores were analysed by two way ANOVA to find out the significance of the

effects of pre-school experience and SES in respect of cognitive performance. Results showed that the effects of SES and pre-school experience on cognitive abilities were significant in respect of all the tests of cognitive abilities.

Thus the findings clearly reveal significant positive relationship between pre-school experience and cognitive abilities as well as between SES and cognitive abilities. Perform-

ance of the children with formal pre-school experience was found to be better than the children without formal pre-school experience. Similar finding has been reported by other

TABLE 2

Summary of Analysis of Variance for each of the Cognitive tasks

Sources	F Values Socio Economic Status (High/Low)	Pre-school experience (With/Without)	SES X pre-school experience
Ravens Coloured Progressive Matrices	17.459**	5.52*	0.14
Figure Copying	128.17**	25.37**	1.25
Clustering	34.00**	4.00*	0.67
Free Recall	101.03**	85.31**	1.84
Digit Span (Forward)	22.22**	6.85**	0.28
Digit Span (Backward)	16.2**	7.87**	0.13
Digit Span (Total)	32.6**	13.07**	0.31

Note: Each F value is associated with df of 1,76.

* $P < .05$

** $P < .01$

investigators (Barry & Barry, 1977; Clark & Cheyne, 1979).

A second aim of the study was to examine the impact of different SES background on cognitive abilities. The result shows that children from the high SES family were superior in performing cognitive task than children from low SES family. Studies showed that material storage on home and poor conditions greatly

affect parental childrearing method, which in turn affect the cognitive abilities (Williams, 1977). The present study also found positive relationship between high SES and cognitive development.

Since both pre-school education and high SES are found to have facilitatory effect on cognitive abilities, it would be worthwhile to discuss the relationship between pre-school education and SES and their interactional impact

on the cognitive abilities of children. So attempt was also made to examine the effect of interaction between education and SES on cognitive abilities of children.

Table 2 shows that the interaction effect was not significant. In the absence of a significant interaction effect nothing can be said regarding the differential impact of pre-school experience on low and high SES children. Further studies are needed to examine the relationship between some important home variables associated with SES (parental education, material possession, caste), pre-school education and cognitive abilities.

Study II

This study is based on the findings of the earlier study (study 1) which strongly suggests that pre-school experience does have a positive effect on the development of the cognitive abilities of children. As reported in the previous study, several investigators in western countries and in India have found the facilitatory impact of early childhood education on cognitive development. Now the question is whether the pre-school programmes have merely a temporary effect or a more permanent long-term impact on cognitive development of children. Western studies have revealed conflicting findings. Some pre-school intervention studies have shown a sustained effect which can be measured during the school years. Gray and Clause (1965) point out that pre-school programmes provide a basis for future progress in schools and homes that can build on this early intervention. Kirk (1958) found that specifically children in institution and from inadequate homes derive significant benefit from pre-school experience. However, Gray and Klaus (1965) could not find a significant difference between the control and the experimental groups of children at the end of grade 4. Di-torenzo

and Salter (1969) in an evaluation of the effects of pre-school programme introduced in eight New York State communities found significant difference between randomized experimental and control groups, through the first grade on test of academic achievement. But the effects were no longer visible at the end of the second grade. In view of these contradictory observations it seems worthwhile to evaluate the long-term impact of pre-school education on cognitive development before any pre-school intervention programme is undertaken in our country. Thus, this study intended to examine the effects of pre-school education on cognitive abilities of pre-adolescents and adolescents.

Methodology

Sample : The sample consisted of 80 subjects divided into four sub-groups on the basis of their age (pre-adolescent and adolescent) and pre-school experience (with formal pre-school experience and without formal pre-school experience). All the subjects were from middle class families.

Tests and Procedure: The subjects were given a non-verbal tests of reasoning (Progressive Matrices, Ravens, 1983) and a rote memory test (Digit Span Test, Wechsler 1949). Both the Tests were administered in one session and the sequence of administering the tests were same for all children.

Results and Discussion

Table 3 presents the means and standard deviations for the matrices and Digit Span Tests for the four sub-groups. The data were further analyzed by 2x2 analysis of variance to examine the effects of formal pre-school experience and age on the cognitive abilities. Results indicated a significant age ($F=115.43$; $df=1,76$; $P<.01$) and pre-school experience ($F=23.40$; $df=$

1,76; $P < .01$) on Raven's progressive matrices test scores. Adolescent students performed significantly ($F=8.48$; $df=1,76$, $P < .01$) better than their pre-adolescent counterparts irrespective of their schooling experience. It may be mentioned that Digit-Span, being a level I test, measures

rote memory. According to Jensen (1969) there is very little individual and sub-group differences in level I ability test. In other words, level I is equally distributed in the population whereas level II is differently distributed in different sub-groups.

TABLE 3

Mean and standard deviation values for cognitive ability tasks.

Variables		Pre-adolescents		Adolescents	
		With formal pre-school experience	Without formal pre-school experience	With formal pre-school experience	Without formal pre-school experience
Ravens' Progressive Matrices	M	34.65	29.20	45.95	41.00
	SD	5.15	3.14	5.23	4.89
Digit Span Forward	M	4.90	4.80	6.50	6.20
	SD	1.02	1.07	0.68	0.98

Jensen hypothesises two levels of abilities; level I or associative ability and level II or abstract reasoning ability. The two levels can be classified in terms of amount of information transformation required, or the degree of correspondence between input and output. At lower levels of the hierarchy the transformation of input or information processing is relatively simple or direct, approaching a one to one correspondence. Higher levels of cognitive functioning depend on the elaboration and transformation of information or stimulus input and comparing the input with previously stored information.

According to Jensen, Level I represents the ability to receive and store stimuli and later recall or recognise them with a high degree of fidelity. At level II the input is transformed or

mentally manipulated to arrive at a judgement. The complexity continuum is not the same as difficulty per se, nor should it be confused with culturally biased versus culture free content. Matrices and digit Span, for example, are comparatively "culture-fair" tests but represent relatively pure measures of level II and level I, respectively. Jensen hypothesises that level I is independent of sub-group differences whereas level II is differently distributed in the population. He hypothesises a strong evidence of genetic factor for sub-group difference. However, in Indian context genetic factor is not an adequate explanation rather environmental variables can explain the individual and sub-group differences in a more plausible manner. Therefore, there has been current upsurge of interest in identifying the environmental and

socio-cultural factors that gives the required "push" or retard the cognitive growth. A more plausible explanation would suggest that the indices of SES such as income and occupation may represent insufficient assessment of important environment of variables related to the development of cognitive abilities.

Studies in Indian culture have clearly revealed that individual and sub-group differences in cognitive ability can be better explained in terms of experiential factors than a genetic explanation. The findings of the present study

can also be interpreted as showing that formal pre-school education not only helps in developing the cognitive abilities which are positively related to the school competence of the children but such facilitative influence of pre-school education has a long-term effect on cognitive development. Such an interpretation certainly refutes Jensen's contention that early childhood education can produce little change in intelligence which is primarily affected by genetic factors.

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Problem Solving as Related to Intelligence and Personality in Socially Deprived and Non-deprived Children

SUMAN VERMA and VIDHU MOHAN

IN PROBLEM solving situation an individual is confronted by external conditions in which an obstacle must be overcome to reach the goal. According to Johnson (1972) problem solving is characterized, by (i) goal orientation and continuity of action towards that goal, and (ii) change of activity after the goal is attained. Special characteristics, in contrast to routine activity, are (iii) intra-individual variability, because the individual makes diverse attempts at solution; (iv) inter-individual variability, because even the first attempts of different individuals are seldom the same; (v) time required, because problem solving takes longer than the execution of a previously learned response pattern of comparable complexity; and (vi) the assumption of mediating activities is plausible.

The process of problem solving is a complicated one. Vinacke (1952) has distinguished three stages while analyzing behaviour in a problem situation. These are, (i) confrontation

by a problem, (ii) working toward a solution, and (iii) solution. After doing the factor analysis of the abilities required for solving the problems, Merrifield et. al. (1962) outlined five phases, preparation, analysis, production, verification and reapplication. These are not viewed as clear-cut successive steps: rather "there is an approximation to temporal ordering with much overlapping of particular events."

In many simple problems these phases may become telescoped in a single, swift coordinated phase of activity. However, in complex situations all phases may be distinctly observed. Ajwani (1979) has tried to put these processes together and according to him human problem solving consists most typically of the following processes: apprehension or recognition of the problem; together with effort to deal with it; some manipulation or exploration of the situation; some degree of control or direction of performance; the understanding of the immediate requirements of the situation, and

emotional responses representing some degree of personal involvement in the situation.

People differ in intellectual abilities, in the way they perceive events and code them in memory, and in the strategies they employ in solving problems. Studies indicate (Blocke, 1981) that the way in which individuals categorize objects and events is related to their personality characteristics. It has been argued that impoverished conditions of life produce kind of personality pattern that results in various kinds of inadequacies in behaviour. The roots are traced to parental interactions and the general process of socialization which the child in the impoverished environment undergoes (Sinha and Misra, 1982; Sinha, 1985).

Although most educators would agree with the proposition that the social environment is one of the most pervasive influences on a child's cognitive behaviour, only a relatively small number of educational researchers include detailed assessments of the social milieu in analyses of children's outcomes. According to Marjoribanks (1979), in social-psychological and educational empirical research, a child's cognitive behaviour has typically been examined in relation to one of the following three models; (i) the trait model; (ii) the situationism position; and (iii) the interactionism framework. In the present study, the situationism position is adopted to investigate associations between a child's problem solving behaviour and different measures of the social environment. It is a basic assumption of the study that problem solving behaviour is the result of an indispensable, continuous interaction between individuals and the situations they encounter. These environments have been categorized as prolonged social deprivation and non-deprivation in the social-psychological environment of the children.

The present study shall further explore the possibility that the difference in problem solv-

ing skills, if any, between children from socially deprived and non-deprived backgrounds, may be due, at least in part, to a set of learned behaviours that constitute a culturally defined cognitive stimulating environment. Research on personality has brought out the significant role of the social environment in the personality development of a child. Personality as a term is used to describe and account for individual differences and behavioral consistencies. This research endeavours at broadening the definition of personality to include intellectual factors, particularly the variety of cognitive processes that an individual employs in solving problems and dealing with new situations.

Hypotheses

1. Social Deprivation and Problem Solving: Research studies on deprivation have shown that unstimulating environments result in degraded performance on problem solving tasks (Bloom, 1964; Hess and Shipman, 1965). It can, therefore, be hypothesized that :

Socially non-deprived subjects would perform better on problem solving tasks as compared to socially deprived subjects.

2. Intelligence and Problem Solving: A review of research literature on intelligence substantiates that it is positively related to performance on anagrams (Mendelsohn, Griswold and Anderson, 1966); on conceptual tasks (Laughlin, 1967); and on logical reasoning tasks (Klausmier and Laughlin, 1961). Based on the above mentioned studies, the following hypothesis may be put forth :

Children with low intelligence will perform poorer on problem solving tasks as compared to children with high intelligence whose performance on problem solving tasks will be superior.

3. *Extraversion and Problem Solving* : In a study of problem solving and extraversion/introversion, Eysenck (1959) found that extroverts not only took longer but also performed less accurately than introverts in Morrisby Compound Series test. Malhotra (1975) also found introverts to be better in problem solving behaviour. It can, therefore, be hypothesized that:

Introverts will perform better than their extrovert counterparts on the problem solving tasks.

4. *Neuroticism and Problem Solving* : Neuroticism is considered as a general factor in motivation. According to Broadhurst (1975) anxious subjects are likely to perform best on simple problems while non-anxious subjects are likely to be superior on complex tasks. This was confirmed by Malhotra (1975) on a study of problem solving behaviour and personality correlates. It can, therefore, be hypothesized that:

Neurotic children will perform better on the simple problem tasks than stable children (Problem square Test).

Stable children will perform better on the difficult problem task than their neurotic counterparts (Match Stick Test.)

5. *Sex and Problem Solving*: A glimpse into the scientific literature shows that studies exist wherein sex differences in problem solving have been witnessed, showing the superiority of males on a variety of problem solving tasks (McWay, 1975; Hayes, 1978). On the other hand few studies have shown the superiority of females over males (Malhotra, 1975; Singh, 1979). There have yet been some studies wherein no sex differences have been obtained (Davis, 1967; Kumar & Kapila, 1981). The above review of studies does not settle the question of sex differences in problem solving. Therefore:

A null hypothesis is framed for sex differences in problem solving abilities.

Methodology

DESIGN

A factorial design of $2 \times 2 \times 2$ was employed for the present investigation. The factors chosen for the study were social deprivation, intelligence and two personality dimensions in both males and females, i.e., social deprivation, social non-deprivation, high intelligence, low intelligence, extroverts, introverts, neurotics and stables in both males and females.

Tools used For sample selection

1. *Prolonged Deprivation Scale* (Misra and Tripathi, 1977): PDS is a measure of experiential deprivation in natural life, consisting of 96 items divided into fifteen aspects of deprivation.

2. *Junior Personality Inventory* (Mohan et al; 1968): JPI is a measure of two personality dimensions, i.e., Extraversion/Introversion and Neuroticism/Stability in children. The inventory consists of 68 items, each set of 34 items consists of seventeen parallel items which facilitate the calculation of reliability and serve as a crosscheck on the tendency of lying in the subjects.

3. *Raven's Progressive Matrices* (Raven, 1960): SPM consists of 60 problems divided into five sets of twelve.

SAMPLE SELECTION

The study was conducted in two phases. In the first phase 700 children, 350 males and 350 females from various schools in Chandigarh in the age range of 12-14 years were administered the PDS. This delineated the socially deprived Ss from the non-deprived. The Ss were then administered SPM to study the differences in

the intelligence score of the two above mentioned groups and to differentiate the high intelligence group from the low intelligence group in Ss. JPI for Extraversion and Neuroticism was further administered to study the differences in the personality traits of the socially deprived and socially non-deprived sample and to further differentiate Ss high in extraversion/introversion and neuroticism/stable.

The homogeneity of the sample was tested for PDS, SPM and JPI but none of the t-ratio's for sex differences were significant upholding the homogeneity of the groups.

Based on the final scores of the Ss on the three tests administered, the final selection of the sample was made as per the factorial design of $2 \times 2 \times 2 \times 2$.

Selection of the Final Sample: The criterion for selection of the two extreme groups (high and low) each on deprivation, extraversion, neuroticism and intelligence was by taking plus and minus half SD above and below the mean value on each variable. Ss, both males and females, socially deprived and socially non-deprived, extroverts and introverts, neurotics and stables, high intelligence and low intelligence were differentiated into the sixteen cells of the factorial design to finally yield a total sample of 160 Ss.

Procedure : The second phase of data collection consisted of administering individually the two problem solving tests, namely Match Stick Test and Problem Square Test to the selected sample of 160 Ss.

Tools used for the final study

1. Match Stick Test (Scheerer, 1971): This problem solving task consists of six match sticks. This is required to make four equilateral triangles with the help of these match sticks (see Figure 5.1). Scoring is done in terms of the

time taken by the S and the total number of trials undertaken to complete the task successfully.

2. Problem Square Test (Bhatia, 1955): This problem consists of a big square made of twenty-nine broken lines making nine small squares in total. Each square including the centre one is divided by a diagonal broken line (See Figure 1). The S is required to trace all the lines without lifting the pen and without retracing any line. Ss performance is evaluated in terms of the total time taken and number of trials undertaken to successfully complete the task.

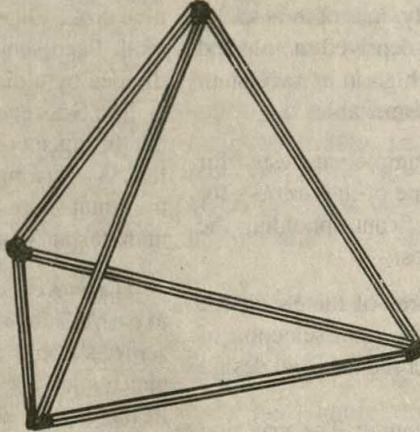
The above mentioned tests were administered to each S individually in a separate room. Some subjects could not successfully complete the match stick test and gave-up after a few trials. In the case of such Ss, the time recorded was when they gave-up with the total number of trials attempted till give-up time. Finally, the scoring sheets were scored as per the scoring procedure which was in terms of the total time taken and the number of trials undertaken by the S to successfully complete the task.

Results

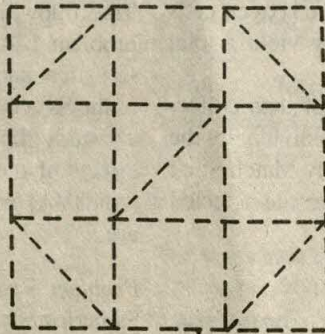
The following sections will deal with the two problem tasks separately with details of the statistical analysis used to see the performance of the Ss according to the variables of the study. To study the main effects and the interaction effects of the variables, Analysis of Variance (ANOVA) was applied as a statistical measure.

Problem Square Test: The assessment of the Ss performance on this problem task was done in terms of the number of trials taken and total time taken by the S to complete the task. The mean values with SD for each variable is given in Table 1.

PROBLEM SOLVING TASKS



MATCH STICK TEST



PROBLEM SQUARE TEST

TABLE 1

Means & SDs For Deprivation, Intelligence, Personality and sex on Problem Square Test

Variables	Time Taken		Number of Trials	
	Mean	SD	Mean	SD
Non-Deprived	21.30	15.92	18.75	13.23
Deprived	29.42	20.40	24.30	16.12
High Intelligence	17.60	16.50	16.87	14.55
Low Intelligence	33.12	17.57	26.17	13.96
Introvert	28.00	19.49	25.17	15.70
Extravert	26.90	20.95	20.95	14.22
Neurotic	23.62	18.21	18.90	13.49
Stable	22.95	17.25	21.07	16.14
Male	22.18	14.42	17.48	9.74
Female	28.53	21.78	25.56	17.96

Results of ANOVA are given for the problem square test in Table-2. As evident, the main effects of deprivation, sex and intelligence on problem solving is statistically significant.

TABLE 2

Anovas for deprivation, personality, intelligence and sex for time taken and number of trials taken on problem square test.

Variables	df	Extraversion				Neuroticism			
		Time Taken		Number of Trials		Time Taken		Number of Trials	
		MSS	F	MSS	F	MSS	F	MSS	F
TSS	79	383.57		226.24		310.89		219.66	
BSS	17	658.35		492.13		804.45		421.53	
WSS	64	319.16		163.92		195.21		172.34	

TABLE 2 (Conti)

Anovas for deprivation, personality, intelligence and sex for time taken and number of trials taken on problem square test.

Variables	df	Extraversion				Neuroticism			
		Time Taken		Number of Trials		Time Taken		Number of Trials	
		MSS	F	MSS	F	MSS	F	MSS	F
Main Effects									
Deprivation	1	1,240.31	3.92*	567.11	3.96*	1,402.81	7.19**	667.01	3.91*
Sex	1	987.01	3.09	2,152.81	13.13**	644.11	3.29	667.01	3.91*
E/I, N/S	1	25.31	0.09	357.01	2.18	9.11	0.05	94.61	5.49*
High int./Low int.	1	3,934.01	12.32**	2,453.11	14.97**	5,797.01	29.69**	1,132.51	6.57*
Interactions									
D X S	1	374.11	1.17	201.61	1.23	1,990.01	10.29**	1,757.81	10.19*
D X E/DXN	1	332.11	1.04	300.31	1.33	208.01	1.07	43.51	0.03
D X Int.	1	137.81	0.04	1.01	0.01	46.51	0.02	515.11	2.99
S X E/SXN	1	23.11	0.07	43.51	0.03	248.51	1.27	227.81	1.32
S X Int.	1	838.51	2.63	588.61	0.04	632.81	3.24	409.51	2.38
E x Int. NxInt.	1	485.11	1.52	19.01	0.01	127.51	0.07	37.81	0.02
D x S x E/D x S x N	1	234.61	0.07	262.81	1.50	43.51	0.02	70.31	0.04
D x S x Int.	1	632.81	1.98	300.31	1.83	1.01	0.01	35.11	0.02
D x ExInt./DxNx Int	1	567.11	1.78	1.01	0.01	5.51	0.03	4.51	0.03
S x E x Int./SxNx Int	1	10.51	0.03	74.11	0.05	632.81	3.24	495.01	2.87
D x S x E x Int./D x S x N x Int.	1	52.81	0.02	59.51	0.04	277.51	1.42	165.31	0.09
*p< 0.05 **p<.01									
D : Deprivation E/I: Extraversion/ Introversion									
S: Sex N/S: Neuroticism/ Stable									
Int. : Intelligence									

Interaction : The interaction between deprivation and sex is significant at .01 level for time taken and the number of trials in neurotics (See Table 2) yielding a F-ratio of 10.29 and 10.19 respectively.

Match Stick Test: In the match stick test many Ss failed to complete the task successfully and gave up after a few trials. Therefore, in the case of the match stick test, the indices of performance were

assessed in terms of successful completion and unsuccessful completion of the task on the part of the Ss. The mean values with SD for each variable on this problem task for Ss who completed the task successfully and those who gave up after a few trials, is given in Table 3. Further, Table 4 gives details of the number of Ss who completed the task successfully and those who gave up after a few trials on the match stick test.

TABLE 3

Means And SDs For Deprivation, Intelligence, Personality And Sex On Match Stick Test.

Variables	S.A./G.	Time Taken		Number of Trials	
		Mean	SD	Mean	SD
Non-Deprived	S.A.	44.85	21.80	12.75	6.54
	G.	43.0	20.11	8.50	5.68
Deprived	S.A.	53.34	18.58	9.54	4.22
	G.	62.44	23.78	8.95	3.26
Introvert	S.A.	44.03	18.67	11.62	5.18
	G.	54.91	22.84	9.27	3.95
Extravert	S.A.	49.87	20.76	11.52	6.79
	G.	60.11	15.72	8.33	2.91
Neurotic	S.A.	46.75	21.52	11.46	6.83
	G.	68.75	25.45	9.92	4.21
Stable	S.A.	51.36	20.24	11.76	5.11
	G.	53.93	25.88	8.07	3.63
High Intelligence	S.A.	41.97	19.42	10.82	4.52
	G.	65.78	19.20	9.56	2.65
Low Intelligence	S.A.	58.05	17.73	12.88	7.77
	G.	57.55	25.14	8.71	3.92
Male	S.A.	46.51	20.93	8.15	3.10
	G.	41.27	16.33	7.0	2.64
Female	S.A.	49.85	19.33	16.23	5.84
	G.	67.50	22.77	9.75	3.83

S.A.: Successful Attempt

G.: Given-Up

TABLE 4

Chi-Square Values On Deprivation, Intelligence, Personality And Sex On Match Stick Test.

Variables	Successful Attempt	Given-Up	Chi-Square
Non-Deprived	72	8	28.95**
Deprived	41	39	
High Intelligence	71	9	25.34**
Low Intelligence	42	38	

TABLE 4 (Contd)

Chi-Square Values On Deprivation, Intelligence, Personality And Sex On Match Stick Test.

<i>Variables</i>	<i>Successful Attempt</i>	<i>Given Up</i>	<i>Chi-Square</i>
Extrovert	31	9	0.27
Introvert	29	11	
Neurotic	28	12	
Stable	25	15	0.50
Male	65	15	
Female	48	32	8.71**

** $p < .01$

Chi-square test was administered for the match stick test on Ss who could complete the task successfully and those who gave up. Calculated values of chi-square on deprivation intelligence, two personality groups, extraversion and neuroticism in males and females is given in Table 4.

As is evident from Table 4, the variables of social deprivation, high and low intelligence and sex differences reveal a statistically significant difference at .01 level with the non-deprived Ss, high intelligence Ss and males performing better on the match stick test as compared to their respective counterparts. The dimensions of personality, extraversion and neuroticism, however revealed no significant differences.

Discussion

The results of the present study are manifold and varied. Most of the findings support the hypotheses framed earlier on the various variables of the study. The discussion would follow the framework in which the present problem was envis-

aged in the form of hypothesis, and one by one each salient feature would be discussed.

I. SOCIAL DEPRIVATION AND PROBLEM SOLVING

The problem square test revealed significant F-ratios on both time taken and the number of trials in favour of the non-deprived subjects (See Table 2). The chi-square value revealed significant differences (See Table 4) with the non-deprived children attempting the task successfully in significantly greater number as compared to the deprived children who gave up after a few trials.

Results of the present study are in concurrence with the findings of other studies done on the impact of social deprivation on the cognitive abilities of children. In general these studies provide evidence that being deprived of normal experiences has a marked and sometimes prolonged effect upon physical as well as intellectual development (Yarrow, 1961; Provence and Lipton, 1962; Sinha, 1985). The discussion that

follows will focus on some of the factors which could have accounted for the observed differences in problem solving abilities of the deprived and the non-deprived children in the present study.

1. Social Environment: Differences between the problem solving abilities of the two deprivation groups lend support to the contention that constitutional social class differences in cognitive competence exist (Leifer, 1972) for the viewpoint that a difference in class oriented child rearing practices (Bronfenbrenner, 1958; Kohn, 1959); value orientation of parents (Maccoby and Gibbs, 1970); and cultural opportunities accounts for the variance in the problem solving abilities between the two deprivation groups (White et al, 1970).

The prolonged deprivation scale (Misra and Tripathi, 1977) used in the present investigation brings out the differences in child rearing practices, parental characteristics, nature of interaction with parents, motivational and educational experiences in the deprived and non-deprived environments. Further studies have shown that the child rearing and disciplinary practices adopted by the parents of the deprived children are low in achievement training and independence training (Warty and Mehta, 1970; Muthayya, 1974). The reasons for the differences in problem solving abilities could be that in the case of the non-deprived subjects, the parents socialization practices impose standards of excellence upon tasks, communicate to him that they expect evidence of high achievement. Similarly, for independence training parents indicate to children that they expect them to be self-reliant and they grant their children relative autonomy in problem solving and decision making situations.

In the present study, it was observed that on the match stick test the deprived children gave up the test in significantly greater number (See

Table 4) as compared to the non-deprived subjects. Thus, learning experiences with toys, self help skills and solving daily life problems help a child to be motivated and independent in solving problematic tasks.

2. Mediation Abilities: Problem solving and cognitive structures are built of representations or mediational processes. Representation of objects, events and relations may be considered as problem solving units which are acquired through experiences stored in memory and retrieved on demand. The insightful problem tasks used for the study involve the usage of these mediational abilities. Therefore the results obtained in the present study also suggest that these three aspects of problem solving competence (acquisition, storage and retrieval) are largely influenced by the degree of deprivation at the experiential level with the result that the ability to engage in problem solving behaviour in response to demands of a situation fails to develop in the same manner as in the non-deprived subjects.

3. Cognitive Lag: Studies indicate that with increase in age the differences in cognitive abilities between advantaged and disadvantaged children increase (Bloom, 1964; Coleman, 1966). Goldstein and Myers (1980) studying the concept of cognitive lag found that the disadvantaged show a less advanced level of intellectual skills as compared to the advantaged.

In the present investigation the sample consisted of children in the age range of 12-14 years. Therefore, this concept of a cognitive lag may be put forth as accounting for the differences in problem solving abilities of children in the same development stage characterized by slow rate of unfolding of problem solving abilities in the deprived as compared to the non-deprived.

4. Cognitive Style: The qualitative judgement and incidental observations made by the investigators during the experimentation revealed

certain differences in cognitive styles of the two groups. The deprived children were found to be inattentive to the demands of the testing situation. Their behaviour was viewed as insufficiently task-oriented, insufficiently focussed, and being unselectively responsive to non-pertinent environmental stimuli. This is evident from the significantly high number of deprived children who gave up working on the match stick problem task (See Table 4). In contrast, the non-deprived children were found to be readily interested in the test demands and to follow instructions with ease. This tendency to make fewer attempts at problem solving when confronted with a problematic task on the part of the deprived children may also be interpreted in terms of motivational lack.

II. INTELLIGENCE AND PROBLEM SOLVING

Results of the present investigation support the hypothesis of superior performance of high intelligence subjects on problem solving as compared to the low intelligence subjects.

The results of the present study can be supported by a number of earlier research evidences showing a positive relationship between high intelligence and superior problem solving abilities in children (Rouse & Rouse, 1982 ; Knepper et al, 1983). The factors accounting for this relationship between high intelligence and superior problem solving abilities may be manifold.

1. *Cognitive Competence*: Beyond the theoretical and operational definition of intelligence is the empirical definition which refers to the ability of the individual to cope with his environment, his ability to adjust, his ability to solve most of his problems, and his ability to achieve generally agreed-upon goals (Kennedy, 1975).

In the present study the problem square test used is from the Bhatia Test Battery, which assesses mental abilities like memory, spatial

ability, perceptual speed, problem solving and reasoning. Further the SPM (Raven, 1960) used for assessing the level of intelligence of children in the present study basically consists of various problem tasks in order of difficulty. Students with high intelligence are more likely to note and correct mistakes, verify solutions, and use a logical approach in problem solving; while students with lower intelligence offer incorrect solutions, make random approaches to the problem, and do not persist in their attempts to solve the problem.

2. *Divergent Thinking*: Another factor accounting for superior problem solving abilities in subjects with a high structure of intellect could be the presence of high divergent thinking which facilitates in creative problem solving. Csikszentmihalyi and Getzels (1971) in their study on problem solving behaviour found a strong positive correlation between divergent thinking and superior problem solving abilities. Saxena (1983) in her study on problem found high intelligence subjects superior in insightful solutions as compared to low intelligence subjects.

In the present study, the nature of the two problem tasks used was such that divergent production operations are reflected behaviorally during both problem finding and problem solution. During problem finding, many different alternatives have to be considered, each is explored extensively to produce original solutions. During problem solution, the problem is not tightly structured, in fact it is being continually restructured and the structuring that does take place evolves gradually.

3. *Strategies*: Lastly, the strategies employed by subjects with varying intelligence levels during the solving of a problem task could be a contributing factor in bringing about differences.

According to the information processing theorists (Simon and Newell, 1971) in a problem

situation, the choice of operators is heavily dependent on the type of problem, the problem solver's experience, the strategy being employed, and the limitations the problem solver brings to any problem, for example, perceptual, memory and other cognitive processes. The poor performance of the low intelligence subjects is evident from the significantly high number of trials used (See Table 2) in the problem square test, thus depicting the greater usage of inappropriate strategies for successful solving of the problem. On the other hand, for the match stick test the low intelligence subjects abandoned the test in greater number after attempting a few trials, suggestive of a limited repertoire of strategies in the cognitive structure of the low intelligence children.

III. SEX AND PROBLEM SOLVING

In the present investigation a null hypothesis was framed for sex differences in problem solving abilities of children. The results, however, reveal significant sex differences in favour of the males in both the problem solving tasks. Therefore, the present results rejects the null hypothesis in favour of males (See Tables 2 and 4).

The results of the present investigation are in concurrence with the research evidence on problem solving tasks that show the superiority of males over the females right from school children (Stanley and Benhow, 1982; Huston, 1983). These researches have led scholars to reason out the poorer performance of females.

The genetic bases of problem solving abilities have been explicitly stated by Eysenck and Wilson (1976), "with regard to the primary asymmetry between the sexes, visual, spatial versus linguistic skills, it is interesting to note that this may be related to a similar cerebral asymmetry. The right hemisphere is more concerned with perceptual, motor, spatial and quite gener-

ally, non-linguistic skills; the left hemisphere on the other hand, is concerned almost entirely with language. There is some evidence that in young children, myelination and the growth of neuronal dendrites in various areas is more advanced in the left hemisphere in girls, and in the right hemisphere in boys". Possibly, this may be regarded as evidence for the biological determination of sex differences in problem solving abilities in favour of males, as have been observed in the present study.

Researches on developmental processes, through which characteristically male and female pattern of responses are formed, brought the role of culture on the development of personality to the forefront. With this a more complex and sophisticated concept of "sex-roles" conceptualized in terms of masculinity and femininity for accounting the sex differences, emerged. It can, therefore, be suggested, in the words of Singer (1975) that "sex differences are due to performance deficits rather than learning or ability deficits. Sex differences reflect performance deficits in women resulting from anticipation of negative consequences for sex-inappropriate behaviour; otherwise the resources which they employ in solving a problem are not deficient".

IV. PERSONALITY AND PROBLEM SOLVING

Personality dimensions of extraversion and neuroticism revealed no significant difference on the match stick test. However for the problem square test on the number of trials taken, the personality dimension of neuroticism revealed a marginally significant F-ratio (See Table 2).

The results of the present investigation can be explained through a critical analysis of Eysenck's personality theory (1947). Critics of Eysenck's theory suggest that there is lack of evidence of cross-situational consistency to

behaviour (Mischel and Peake, 1982). Critics of the theory suggest that personality types reflect systematic distortions in the ways we perceive events and biases based on our conceptions of personality characteristics that we assume go together. In other words, rather than representing actual behavioral co-occurrences, personality dimensions represent labels for what we believe goes with what (Shweder, 1982).

SUGGESTIONS FOR FUTURE RESEARCH

Although a large number of descriptive studies have recently clarified the cross-cultural validity of information processing theorists on problem solving, a great deal of further research is still needed to link the qualitative and quantitative aspects of development of problem solving skills to specific socio-cultural factors. This is essential so that this knowledge can be applied to the educational problems in a developing country like India.

1. This study suggests the need of studying

the impact of an enrichment programme for the deprived children to improve their problem solving skills.

2. It would be worthwhile to study parent-child relationship, child rearing practices and certain related attributes of the home environment in relation to the development of problem solving abilities in children. Further, a home-based intervention programme with specific objectives of changing the home conditions relevant to learning and educability would be meaningful.

3. To improve our present day educational system, the need is there to help develop in our pupils certain perceptual skills and logic which are essential for thinking and learning processes. To have it as a part of the educational system would enable them to acquire these skills and thus, deal effectively with their environmental demands, whether it be in terms of learning, problem solving or interpersonal relationships.

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Phonological Awareness and Reading Acquisition in Kannada

P. PRAKASH AND D. REKHA

PHONOLOGICAL awareness has provided an interesting field for investigation because of its relationship with literacy acquisition. It also lies like a bridge between language and literacy. It belongs to either function: On the one hand, phonological awareness refers to a special category of phonological representations and, on the other hand, some of its forms are part of the process of literacy acquisition and remain tied to literacy codes.

The experimental evidences available today also demonstrate, without doubt, that phonological awareness is a crucial factor in literacy acquisition in the alphabetic system. For a long time now people have been concerned with the question of whether the development of phonological awareness is a cause or consequence of literacy acquisition. Today, it is believed that there is an interactive relation between them. For example, the child instructed on the sequence of the letters C.A.T. acquires representations of the phonological constituent of the written word C.A.T., and then presumably consolidates an orthographic representation of

it, and may be assumed to have worked in some way on his conscious perceptual representation of the spoken word 'cat'. Thus both the nature of this perceptual representation and the processes available to analyse it, on the one hand, and the categorical nature of the alphabetic code and the kind of instruction provided on this alphabetic code, on the other hand, constrain the format of the conscious phonological representation elaborated by the child.

Phonological awareness includes awareness of phonological strings, which is a sort of global, nonanalytical appreciation of the speech sound that may be sufficient for instance to notice sound similarities; awareness of syllables; awareness of phonemes, also called segmental awareness and awareness of phonetic features (the taxonomy proposed by Morais, Alegria and content, 1987).

It is widely accepted that not all these forms of phonological awareness are elicited by literacy instruction. Liberman, Shankweiler, Fischer and Carter (1974, cited in Morais 1988) and

the Bradley and Bryant (1983) and Maclean, Bryant and Bradley (1987 cited in Morais, 1988) have convincingly demonstrated that awareness of syllables and awareness of phonological strings can precede literacy instruction in many children. This idea is also supported by the reported findings with illiterate adults (Morais, 1988). On the other hand literacy instruction is insufficient to elicit awareness of phonemic features.

The development of phonemic awareness is strongly associated with the exposure to explicit instructions on the alphabetic code. It does not stem out of general cognitive development or other forms of metaphonological awareness such as rhyming, sensitivity to similar phonological strings, syllable awareness etc., which develop spontaneously in preliterate. A study by Mann (1986) is particularly important in this context. The study showed that Japanese children by the time of going to IV grade could succeed in segmentation tasks. The analysis showed that some features of Japanese writing system such as a single nasal consonant used to indicate consonant lengthening, diacritic signs to differentiate between voiced and unvoiced sounds etc., make them sensitive to some phonological aspects of their language. (Hollender, 1988, Morais 1988). Some studies in Indian Orthography (syllabo-alphabetic writing system) (Prakash P 1987, Karanth 1986, Patel P.G. and Soper H.V. 1984) suggest that phonological segmentation skills do not develop in children speaking Indian languages as it does in their western counterparts. Thus, it is concluded that the whole writing system need not be necessarily alphabetic for the development of phonemic awareness. A writing system will allow such a development to a degree depending on to what extent the orthographic features facilitate phonemic awareness.

All that is discussed above is based largely on the work reported by Morais (1988).

A question may be asked, how far a non-alphabetic orthography like Kannada permits phonemic segmentation. And a related question, what is the kind of relationship that exists between phonemic awareness and reading in Kannada. In Kannada, like in other Indian languages, there is almost one to one grapheme-phoneme correspondence between syllabic representation of the language and pronunciation. This high grapho-phoneme correspondence has resulted in the absence of irregular spellings and homophone-homograph dissociation. These orthographic features would have some specific influence on the cognitive process underlying reading. The present study was planned to investigate the issues discussed above.

Methodology

54 students from a Kannada medium school situated in Manasagangotri, University of Mysore campus served as subjects for the present study. 18 children, 9 boys and 9 girls, from each grade were randomly selected for the present study, though in case of the first graders, those who could not show any sign of letter identification, were not included in the study.

All these subjects were administered individually, measures of oral reading, reading comprehension, intelligence, vocabulary, rhyme recognition, syllable stripping, phoneme oddity and phoneme stripping.

Oral reading was tested by employing a standard Kannada reading test (Jaya Bai, 1958). Reading comprehension in the absence of any standard test was measured by two passages unfamiliar to the students. Raven's Colour progressive Matrices (RCPM) was administered as a measure of non-verbal intelligence along with a vocabulary test Kannada chitra pada kosha, Mallikarguna (1985). The phonological

measures employed in this study were constructed by the investigators following certain guidelines.

Rhyme recognition test consisted of 12 pairs of stimulus words—6 rhyming and 6 non-rhyming. Each pair was presented orally and subject was required to tell whether they rhymed or not. The test of syllable stripping consisted of three syllable Kannada words of same frequency. The subject was required to remove first, second, or third syllable and to tell the remaining procedure and stimulus material was similar to that followed by Bruce (1964). The phoneme oddity test consisted of 12 set of items. Items were nonsense syllables of CVCV type. The test was similar to the one employed by Bradley and Bryant (1979) [cited in Rekha D. (1987)]. Each set was presented orally to the subject. Out of the 4 words in a set, three would

have a particular sound in common. The subject was asked to find the odd one out by just listening to the oral presentation. Phoneme stripping test consisted of 24 two or three syllable words. The subject was asked to listen to each word carefully and remove a given sound from it and then say what remains. Procedure and stimulus material was similar to that followed by Bruce (1964).

All the tests were administered by the second investigator in the school premises. Testing for each subject was about 90 minutes. Each child was tested in 3 or 4 sessions, of 20-30 minutes. The number of tests administered per session depended on the time taken by one child and his willingness and patience. Before administering any test, rapport was developed. At the end of each session the child was given some biscuits.

TABLE I

Means and SDs of I, II and III Graders on Various Tests

Tests	Grade I		Grade II		Grade III	
	Mean	SD	Mean	SD	Mean	SD
Word read/minute	15.44	6.38	31.5	15.98	37.33	74.48
Total No. of words Read (Max. 150)	52.94	31.08	90.78	37.88	101.78	31.26
Vocabulary (Max. 95)	52.88	6.39	59.17	8.30	62.33	8.98
Comprehension (Max. 9)	4.06	1.43	4.78	1.55	6.02	1.43
RCPM (Max. 36)	19.5	3.50	21.17	4.87	24.17	5.76
Rhyme Recognition	10.11	2.38	10.61	1.83	11.83	0.69
Phoneme Oddity (Max. 12)	6.22	2.12	6.67	2.45	8.22	2.12
Syllable Stripping (Max. 12)	11.11	1.88	10.78	2.39	11.61	1.38
Phoneme Stripping (Max. 24)	10.61	4.26	8.94	7.32	12.61	7.52

Results and Discussion

The means and SDs obtained are given in table 1.

The mean scores in oral reading, reading comprehension, vocabulary, and RCPM increased over the grades as expected. As the table shows, all the subjects irrespective of their grades performed very well on rhyme-recognition and syllable stripping tasks. Though there was a slight improvement over the grades, the performance in general was poor on phoneme oddity and phoneme stripping tests.

In order to test the significance of difference among the group means, one-way ANOVA followed by Sheffe test was employed. The obtained 'F' was significant except syllable stripping and phoneme stripping tests. Scheffe test revealed that significant differences in performance were obtained only when Grade I was compared with Grade III.

DEVELOPMENT OF READING

Qualitative analysis of oral reading showed a kind of developmental pattern comparable to the stages outlined in current model on reading acquisition (e.g., Frith, 1985). The analysis of the oral reading errors across the grades suggested that they follow the following type of sequential stages in their literacy acquisition process.

1. Unable to read (unable to identify the letters).
2. Reading basic letters (with inherent) 'a' without being able to decipher other associated vowel parts of the letter (i.e., reading /ga/for/gi/).
3. Letter by letter decoding analogous to alphabetic Stage of Frith's model.
4. More proficient way of reading. Some examples to illustrate the points are given here. /gudi/ was read as /gade/ in the earlier stages (stage 3) before reading it as /gudi/(stage 4). The words involving

Anuswara or Arka also demonstrate the point. e.g., when individual is read as /dabaru/; /kondi/ was read without Anusara i.e., /kodi/ (earlier to alphabetic stage) and then /ko-oh-do/ before moving on to read it as /kondi/(proficient stage).

Inversion/reversal type of errors which have been recorded in English were, however, not observed in the present study, but in support of one of the arguments that syllabaries are difficult because of too many symbols one has to learn, some errors were observed (e.g., deciphering various cr and cc combinations with their primary and secondary forms). Besides, the errors due to similarity of graphemes were also found (e.g., /krithi/-3) read as /kaithi/ (-3) which can be compared to the confusion between 'b', 'd', 'p' in the English speaking children.

PHONOLOGICAL AWARENESS AND READING

TABLE 2

Showing Summary Of One-Way Anova

Measures		F (2.51)
1.	Word reading/minute	12.96**
2.	Total words read	9.075**
3.	Reading Comprehension	8.06**
4.	Vocabulary	6.19**
5.	RCPM	4.05*
6.	Rhyme recognition	4.23*
7.	Phoneme Oddity	3.75*
8.	Syllable stripping	0.82
9.	Phoneme stripping	1.46

* P < .05

** P < .01

TABLE 3

Multiple Comparison Of Means (Scheffe Test)

<i>Measures</i>	<i>F</i>	<i>F</i>	<i>F</i>
	<i>Grade I Vs</i> <i>Grade II</i>	<i>Grade I Vs</i> <i>Grade III</i>	<i>Grade II Vs</i> <i>Grade III</i>
1. Word reading/minute	2304.00**	4422.00**	336.11
2. Total No. of words read	12882.25*	21462.25**	1089.00
3. Vocabulary	354.69	802.78**	90.25
4. Comprehension	4.69	36.00*	14.69*
5. RCPM	64.00	196.00*	36.00
6. Rhyme recognition	2.25	26.69*	13.44
7. Phoneme Oddity	1.78	36.00*	21.78

* $P < 0.05$ ** $P < 0.01$

The present results show that the children even at Grade III performed very poorly on phoneme stripping and phoneme oddity task (however, to repeat, even younger children did rather very well on rhyme recognition and syllable stripping tests. May be syllable is natural unit of speech). That is, phonological awareness as measured by these tests neither seemed to be prerequisite nor a consequence of literacy acquisition in Kannada. Western children, reportedly, perform perfectly on these tasks by the age of eight years. But the present results show that the skill does not develop spontaneously (maturational). Thus the results seemed to be perfectly in accordance with the observation that phonological segmentation skill which has been shown to contribute to skilled reading and writing does not develop with cognitive maturation, non-alphabetic literacy, or exposure to a language rich in rhymes and other segmental contrast (Read et al., 1986). It only develops in the process of learning to read and write alphabetically. Thus, syllabic segmentation and rhyme recognition may develop spontaneously (Mo-

raise et al., 1986), but phonemic segmentation only has a result of exposure to alphabetic literacy practice.

TABLE 4-

Showing Phoneme Oddity Results

<i>Grades</i>	<i>Target Positions</i>			
	C_1	C_2	V_1	V_2
Grade I	40	43	11	18
Grade II	39	35	20	26
Grade III	44	44	35	23

However, the results did not show that the children are totally incapable of performing phonemic segmentation. While analysing their responses item-wise, it was very interesting to observe that the children of all the grades did almost very well in phonological oddity test items in which the target sound was a conso-

nant and very poorly on items in which the target sound was a vowel. The improvement over the grades on the test was entirely due to improved performance of higher graders on vowel items. (See Table 4).

These observation casts doubt whether the children employ a visual strategy to solve such problems. In Kannada scripts, the consonants always have an independent graphemic form while the associated vowels are attached onto the consonant in their secondary forms (Vowels are fused with the consonant to form the syllabic letter). That is, it is easy to visualize the consonants in an utterance for a Kannada speaker, while it is not for the associated vowels in their secondary forms. This kind of interpretation is further supported by the observation that phoneme stripping task to almost all of the right responses were those where the phonemes to be deleted were Arka or Anuswara which have independent graphemes. These results seemed to be following the hypothesis

of "orthographic image" by Ehri (1979, 1980a, 1980b, 1984). Ehri proposes that while children learning to read and spell, they acquire a visual representation system which enables them to see what they hear and say. Having a visual model of speech makes it easier to treat language as an object and inspect its form in metalinguistic tasks.

To conclude, the results show that:

1. Kannada children's reading acquisition follow a similar course as outlined by the current literacy acquisition models.
2. Phonological segmentation skills does not develop in Kannada children as it does in their Western counterparts.
3. Phonological segmentation which plays an important role in alphabetic literacy, is not a significant factor in Kannada reading. Children can become proficient readers without being good in phonological segmentation task.

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Development of Concept of Ability: A Cross-cultural Comparison

BALJIT KAUR

SINCE the mid-twentieth century, behavioristic and physiological approaches to the study of motivation have given way to a cognitive view of motivation. This latter view holds that all behavior is mediated by an individual's beliefs and thoughts. Therefore, investigation into the individual's perceptions of various situations and relevance of these perceptions and beliefs for understanding and predicting his/her behavior has assumed prominence. A considerable amount of work within this tradition has been related to the influence of students' beliefs about their ability on their achievement behavior. All adherents of the cognitive view of motivation accord a central position to the Concept of ability (Bandura, 1977; Covington, 1984; Weiner, 1986).

A look at the literature reveals that mainly two aspects of the concept of ability have been explored. First, issues related to the notion of perceived competence have been extensively investigated. Whether the question be of how sure an individual is of his/her success, how smart he/she thinks he/she is, or how well he/she expects to do next, the basic interest has

been to investigate the person's competence in general or in specific areas. Second, the aspect of ability which has received a great deal of attention is ability as a causal belief. Though various causal factors have been postulated and investigated, ability is perhaps one of the most thoroughly researched causes of behavior and is considered to be of prime importance in understanding and predicting achievement behaviour (Covington and Omelich, 1979).

The information related to these two aspects has provided useful insights into human behavior. Perceptions of low ability and attribution of failure to lack of ability have been posited to be related to unhappiness (Sohn, 1977) and feelings of inadequacy, incompetence and resignation (Weiner, 1980), the affective states which will hinder goal striving behavior. Knowledge of perceived ability and attributional patterns of an individual can be used to predict his behavior in terms of task choice, expectancies for future success and persistence in the face of failure. Consequently, various intervention procedures have been developed to alter the maladaptive cognitions in people.

All of the mainstream motivation research, implicitly or explicitly assumes that ability is a capacity, understood to be a distinct entity from effort by everybody. Thus the subjective meaning of ability has not been the focus of investigation. However, a growing body of research in the recent years has indicated that there are developmental differences in the way children construe ability (Nicholls, & Miller, 1984). Children do not seem to differentiate ability from effort in the same manner as adults do until about 11-12 years of age. They reportedly progress through four levels of development of the intensive content of ability and effort. At the most differentiated level, level four, is the adult-like view, according to which ability is a capacity, which is meaningful only in the context of social comparison. Ability limits the effect of effort, but is fully-evident only when maximum effort is extended. At the other extreme, level one is characterized by tautological reasoning. Ability is not differentiated from effort and outcome. In order to infer ability, children focus on either effort alone or outcome. Most of the 5-7 year olds show such reasoning. The level two reasoning is based on recognition of effort as a major cause of outcomes. Equal effort is expected to lead to equal outcomes. Ability is not invoked as an independent cause or outcomes. Inconsistent reasoning is the main feature of the next level of development, where ability and effort are partially differentiated (Nicholls, 1978).

The relationship between one's beliefs and one's performance in achievement situation cannot be postulated as an unidirectional channel, where former influences the latter. Performance and related factors are as likely to influence one's understanding of achievement related beliefs and shape these (Kuhl and Atkinson, 1986). Nicholls (1984) has suggested that one factor influencing children's subjective meaning of ability may be the emphasis placed on

inter-individual competition in a child's life. He argued that competition will tend to focus attention on child's performance rather than on the learning of a task, thus promoting the conception of ability as a capacity. Since different cultures value competition to varying degrees, it can be expected that children's subjective meaning of ability may reveal some differences.

Thus it seems that a cross-cultural comparison of the development of ability as distinguished concept from effort may contribute towards furthering our understanding of the factors influencing this development.

Nicholls had documented the developmental progression in differentiation between ability and effort with a sample of New Zealand children (Nicholls, 1978). Kaur (1988) working with children from a large midwestern city in the USA recorded similar trends. The subjects were 20 children each from first, fourth and seventh grades.

Some other studies in USA, Karabenick and Heller (1976), Kun (1977) and Surber (1980) using a quantitative methodology have tried to tap the extensive concept of ability. These authors presented a large number of stories to children, in which judgements had to be made about ability or effort. On the surface of it, these studies seem to be addressing issues quite similar to the question being investigated by Nicholls and his co-workers. However, a closer look at the stories indicated that many of them present effort as "had to try hard", which gives more information about ability, that is, "was not smart (so had to try hard)" than about effort per se "tried hard". Thus these studies do not bear on the issue being discussed in the present study.

Since ability and effort are not differentiated by young children in the same way as

adults do, the implications of perceived ability and of ability as a cause of outcomes may not be the same for them as for adults. An increasing number of western researchers have currently started paying attention to the subjective meaning of ability in children. While perceived competence as well as attributions for perform-

ance outcomes have been investigated quite extensively in India (Dalal, 1988), an exploration of the subjective meaning of ability seems to be singularly absent from the scene. To my knowledge, there has been no study in this area to-date with Indian children.

TABLE 1

Sample Distribution And Age

<i>Grades</i>	<i>Sex</i>	<i>School</i>	<i>Number</i>	<i>Total N</i>	<i>Mean* age</i>	<i>Age SD (in months)</i>	
1	Girls	A	5	10	20	77.7	2.8
		B	5				
	Boys	A	5	10			
		B	5				
2	Girls	A	5	10	20	89.5	4.3
		B	5				
	Boys	A	5	10			
		B	5				
3	Girls	A	5	10	20	101.3	4.1
		B	5				
	Boys	A	5	10			
		B	5				
4	Girls	A	5	10	20	112.4	4.9
		B	5				
	Boys	A	5	10			
		B	5				
5	Girls	A	5	10	20	119.6	6.3
		B	5				
	Boys	A	5	10			
		B	5				
	Girls	A	5	10			
		B	5				

TABLE 1 (Cont)

Sample Distribution And Age

Grades	Sex	School	Number	Total N	Mean* age	Age SD (in months)
6	Boys	A	5	10	133.6	5.9
		B	5			
	Girls	A	5	10		
		B	5			
7	Boys	A	5	10	144.8	5.8
		B	5			

N = 140

*For some children, date of birth was not available in the school records. So N varies at each grade level.

Investigation of the development of concept of ability in Indian children was undertaken at the Department of Human Development and Family Studies, M.S. University of Baroda, as a part of a larger study exploring children's beliefs and behaviors in academic achievement situations along with the beliefs of teachers and parents. The main objective of the first part of the study, being reported herein, was to investigate the developmental progression of the concept of ability as differentiated from effort, in school going Indian children. **Sample:** A stratified random sample of 140 children was selected from two schools of Baroda city. Equal number of children belonged to grades first through seventh. The distribution of sample is given in Table 1.

Most of the children came from middle or upper middle class families, so labelled on

the basis of information on family incomes and parental education.

Procedure

All children were tested individually in a vacant room or a secluded corner in school. A set of five pictures was shown to the child. The pictures were presented as showing a pair of children (of the same sex as the child being tested) solving ten math problems. In two pictures, both of them were working. In the remaining three, one was clearly playing with a hand puppet. Each of them was said to get eight out of ten problems right. A set of six questions, based on the previous research, was asked after ensuring that the child had rightly interpreted the individual pictures (Nicholls and Miller, 1984).

The questions were: (1) They both got 8 out

of 10 right. Did they score high? Did they do well? (2) Was one of them working harder or were they working the same? If there seemed any doubt that the child had misinterpreted the given information, the situation was explained again and the first two questions were repeated. The remaining questions yielded information relevant for child's concept of ability. The child was asked: (3) Is one of them smarter at these problems, or are they the same?... How can you tell? (4) How come they both got the same score when one worked hard and one didn't work hard? (5) What would happen if they both worked really hard? Would one get more, or would they get the same?... How can you tell? (6) So, do you think one of them is smarter or are they the same?

Children who did not clearly think that ability was a capacity were presented with a second situation, showing lower performance (2 out of 10 right) outcome for the harder working child. The child was asked the same six questions, with appropriate modifications in question Nos. 1 and 4

Results and Discussion

The interviews were coded independently by two coders to assign the levels to children's reasoning, in accordance with the guidelines provided by Miller and Nicholls (1986).

The results, represented as percentages of children from various grades at each level of differentiation between effort and ability, showed a developmental progression similar to that reported in the earlier studies. Most of the first, second and third graders did not differentiate between effort and ability, while majority of the sixth and seventh graders evidenced adult-like reasoning, construing ability as a capacity which limits the effect of effort. The fourth and fifth grade children were well spread out across all the four levels.

The data obtained in the study was compared with two similar studies, one conducted in New Zealand (Nicholls, 1978) and the other in the USA (Kaur, 1988). The trends of the findings were similar, though the exact percentages at each level varied for the three studies (See Table 2 and Fig. 7.1).

The differences in percentages at different age levels in the three studies could be due to a couple of reasons. Firstly, though in all the three studies the samples were selected from "economically well-off" urban families in which education was a priority, it is likely that the specifics of their backgrounds varied. It was found that as compared to both the studies done earlier, more Indian children evidenced adult-like reasoning in the higher grades.

Nicholls' suggestion (1984) that a competitive setting wherein inter-individual competition is stressed or where an individual's achievements receive a great deal of public attention, will be likely to facilitate a notion of ability as a capacity seems to be relevant here.

The parents as well as the teachers of Indian children stressed competition, as was evident from their interviews. All parents emphasized the importance of scoring high marks on class tests. The schools had a policy of frequent tests, and teachers rewarded the high achievers socially, by making them monitors, writing their names on boards or giving 'stars'. While similar information about Nicholls' study is not available, the information from Kaur's study in the USA would suggest that neither homes nor schools highlighted inter-individual competition to any noticeable extent. However, such an inference is at best speculative, till further specific investigation of the effect of competition on children's concept of ability can be undertaken.

Secondly, the differences in the results of the three studies could be due to age differences in children included in the studies.

TABLE 2

Comparison of percentages of children from India, New Zeland and the USA at different levels of differentiations.

Grade	Age* (in yrs.)	I			II			Levels III			IV		
		Indian	N.Z.	USA	Ind.	N.Z.	USA	Ind.	N.Z.	USA	Ind.	NZ	USA
	5	—	100	—	—	0	—	—	0	—	—	0	—
1	6	55	69	20	40	31	75	0	0	0	5	0	5
2	7	40	19	—	50	62	—	0	19	—	10	10	—
3	8	55	13	—	30	62	—	10	19	—	5	6	—
4	9	40	6	5	25	56	50	10	32	15	25	6	30
5	10	20	0	—	15	25	—	15	44	—	50	31	—
6	11	0	0	—	10	38	—	25	31	—	65	31	—
7	12	0	0	0	0	13	10	35	31	20	65	56	70
8	13	—	0	—	—	0	—	—	25	—	—	75	—

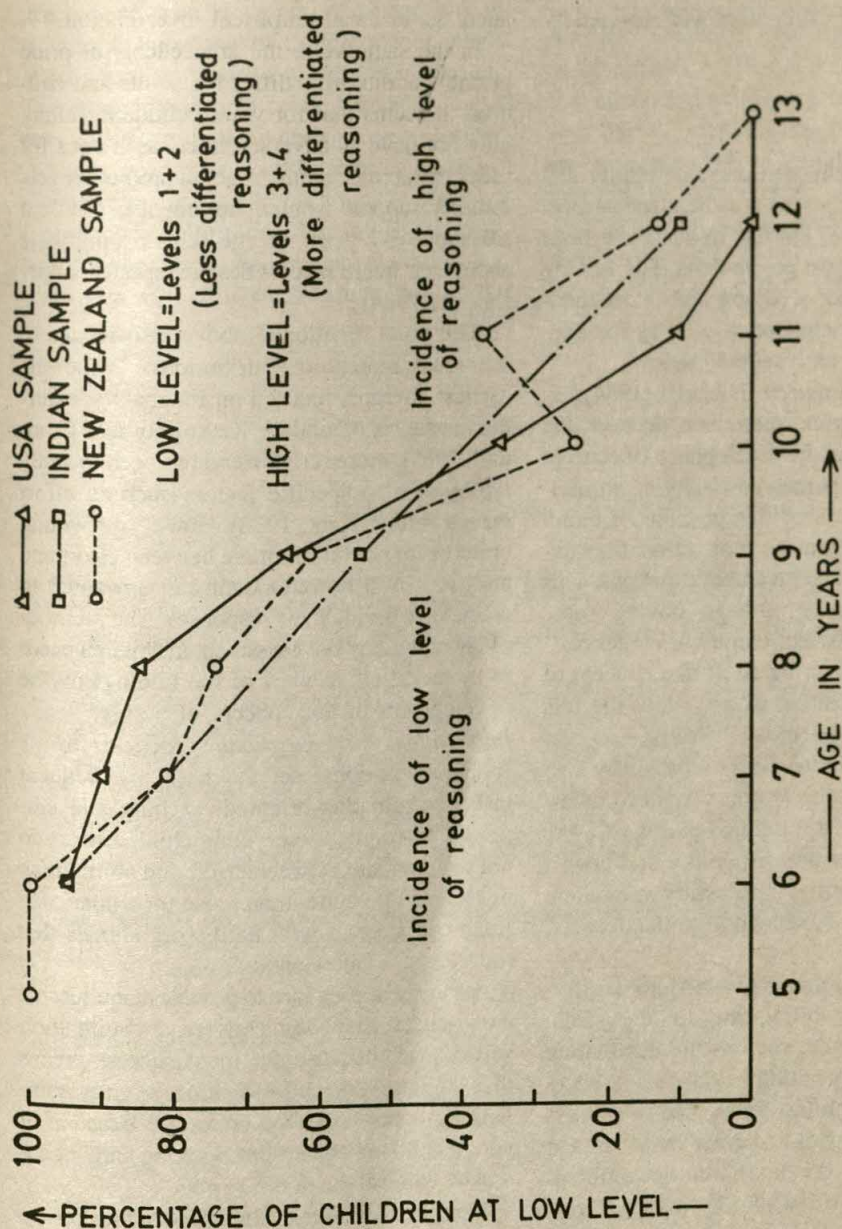
Ind = Indian sample (present study)
 N.Z. = New Zeland sample (Nicholls, 1978)
 USA = US sample (Kaur, 1988)
 - = age level not investigated

*Mean ages available for the present study and Kaur (1988) have been used to arrive at approximately comparable ages given by Nicholls (1978).

Comparison was possible only between the reasoning of children who were at approximately similar age levels, because the actual mean and standard deviation for age is not reported for Nicholls' sample, and appriori matching for age was not done across the studies.

An additional question of interest was related to gender differences in the levels of reasoning reached at different ages. Nicholls (1978) had reported significant sex differences, with fewer girls at the most differentiated level. This result has not been replicated in other

studies by Nicholls and his colleagues, undertaken in the USA (Nicholls, Personal Communication, 1991). The reason for this is not clear. Either it was an idiosyncratic finding, an interpretation favored by Nicholls, or it was something specific to the educational setting in New Zealand, which cannot be specified until further investigation. No gender differences were found in the Indian children's reasoning. The numbers of boys and girls at each level were: level I, 20 and 22; level II, 18 and 16; level III, 11 and 8; and level IV, 21 and 24. A similar



DEVELOPMENT OF CONCEPT OF ABILITY AS DIFFERENTIATED FROM CONCEPT OF EFFORT IN THE THREE STUDIES

Fig. 7.1

absence of gender differences was reported by Kaur (1988).

IMPLICATIONS

The finding that children construe ability differently than adults seems to be a robust one. As reported above, similar trends have been obtained with diverse populations. The finding has implications for studying and understanding motivational behavior as well as for educational practice as discussed below.

Implications for research: Nicholls (1984) has elaborated a complex interaction between the level of reasoning in the development of concept of ability and the perceived ability of an individual. On the basis of this proposed interaction he has predicted the motivational behavior of individuals in achievement situations. This theoretical exposition, though having some indirect support, awaits empirical evidence.

Older children having adult like concept of ability are in a position to use either the less differentiated or the most differentiated reasoning. The conditions under which they will choose to employ one or the other need investigation. Miller (1982) pointed out that "... the study of this conception of ability and how it is applied to the self is a necessary antecedent to the deduction of behavioral predictions...." (p. 94).

Since young children and adults hold different meanings of ability, the findings from motivational research, such as the debilitating effects of low ability or differential consequences of attributions to ability for failure or success in adults may not hold true for children. For example, young children who do not differentiate between effort and ability may not give up trying, because for them 'trying hard' means 'being smart'. Similarly, success obtained with a lot of effort may not be perceived by them to reflect that they are not smart. These and re-

lated issues await empirical investigation.

In the same vein, the antecedents of pride in one's ability may differ for adults and children. It seems that for young children, failure may not have as adverse effects as it does for older children or adults. Such a prediction gets indirect support from a finding that children till about 6-7 years of age remain optimistic about their future success despite repeated failure (Stipek, 1984).

The point mentioned above also relates to the measurement of attributions. While the earliest attempts focused on internal vs. external causation (Crandall, Katkovsky and Crandall, 1965), more recent trend has been to study attributions to specific factors such as effort versus ability (Kaur, 1988). However, if young children do not differentiate between effort and ability, it will be redundant and unwanted to artificially divide their responses. The methodology of attribution assessment in children needs to be modified, in view of the findings on the development of the concept of ability.

Implications for educational practices: In the Indian educational set up, beset by frequent tests, examination-oriented teaching and emphasis on competition, young children who do not differentiate between effort and ability may be able to fare better than those for whom each failure or success with hard work signals that they are not smart enough.

It may be a good idea to provide many success experiences to young children to build their self-esteem, because for them success means that they are smart. In addition, slightly challenging tasks will also be useful because of young children's belief that working hard means that one is smart.

Further, for some children in fourth/fifth grades and almost all the older children will have to be careful about giving praise. Praise is an effective motivator and it is the most appropriate reinforcer in our set up because it

involves no cost. However, it is important for teachers to know that by middle school, almost all children understand ability as a capacity. Therefore if one gets praised lavishly for an easy task (task will be seen as easy if others could succeed on it with little or no effort), it may convey that the teacher has a poor opinion of one's ability, thus leading to demoralization rather than encouragement.

In sum, if a child's achievement behavior is

to be adequately understood, it is necessary that this subjective meaning of ability be investigated along with his perceptions of ability and importance of ability as a causal factor. This line of research has potential to enrich our understanding of children's beliefs and behaviors in achievement situations. The importance of understanding such behavior hardly needs reiteration, given the dismal performance of children in our schools.

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Effectiveness of Intervention Strategies with Learning Disabled Children

J. ROZARIO, M. KAPUR AND K. SUBBAKRISHNA

HISTORICALLY, researchers have been interested in children with specific learning disabilities and have been motivated by the hypothesis that such children's learning problems are related to underlying neurological deficiencies. These researchers have been interested in identifying the underlying causes of disabilities with hopes of developing preventive measures. The multiple disciplines involved in this research have resulted in varying terminology and operational definitions of the learning disabled child. Currently, given the widespread and nonspecific use of the term, any child who is not learning at his or her expected rate in school can be labeled as learning disabled (Morris, 1988).

The academic characteristics of students with learning problems vary widely. Wallace and McLoughlin (1979) point out that many of these students encounter difficulties in one specific area (mathematics), whereas others experience problems in a number of academic subjects. To a large extent, these problems involve the understanding or use of spoken or written

language and reveal themselves in difficulty with reading, thinking, talking, listening, writing, spelling or doing maths (Hammil and Barte, 1982).

The causes of learning problems may be many and complex. Seldom, if ever, is a single cause of difficulty unequivocally identified. Some causal factors, such as genetics, operate over a long period of time and may predispose an individual to have problems. A predisposing factor does not cause a learning problem directly, but it increases the probability that an individual will develop such a problem. Other factors such as a traumatic event or inadequate teaching, are more immediate in their effects and may precipitate a learning difficulty. Most learning problems appear to be causal by an interaction of several predisposing and precipitating factors (Hallahan, Kauffman and Lloyd, 1985).

Academic skills deficiencies range from mild to severe and this complicates the picture of prevalence rates. According to Gardner and Sperry (1974) unexpected poor performance in

school is estimated to occur in 25 per cent of school children and one-third to one-half of young people seen in psychiatric clinics have been referred primarily because of school learning problems. Indian studies show that around 30 per cent of the students in any class are rated by the teachers as deficient in academic skills (Kapur, 1985 ; Rozario, 1988). The present study is an attempt to find ways and means to make these vast student population succeed in academics.

The academic load and the importance given for academic performance increases significantly at IVth standard level. Many teachers and parents, only at this stage realise the discrepancy between the poor performers and others and try to seek professional help. Hence this group is taken for the present study.

Methodology

All the IVth standard students in the age group of 9 to 12 years of sections A and B of an English medium school were screened using Rutter Proforma-A. The two class teachers scored the questionnaire. Out of 105 students, the teachers rated 29 students as poor performers. From this group 10 students were randomly selected for remedial education.

The selected students were assessed by a battery of tests to find the baseline performance. The tests used were (1) WISC - Indian adaptation (Malin, 1971), (2) Test of Arithmetic, (John, 1988), (3) Tests of reading, writing, comprehension and spelling (John, 1988), (4) Bender Gestalt test (Bender, 1938), (5), Developmental test of Visual Motor Integration (Berry and Buktenice, 1967), and Rutter Proforma-B (Rutter, 1967).

After the baseline assessment the students were given 20 sessions of remedial education in groups of 5. Each sessions lasted for 1 hour and the entire sessions were spread to a period of two months at the rate of 3 sessions per

week. Then they were assessed again by the same battery of tests.

Summary of remedial education : (A detailed plan of intervention strategies used is available with the authors).

The remedial education was based on individual-tailored programmes with the following steps:

- Step-1 Identifying the dificits through assessment.
- Step-2 Determining the factors likely to facilitate learning example : wants to know continuously how he is doing, does better when someone is sitting next to him, etc.
- Step-3 Instruction through three phases.
 - (a) Presentation—presenting the task via explanation, prompt cues and modeling providing immediate feedback and reinforcement.
 - (b) Beginning controlled practice activities on worksheets, providing feedback and reinforcement.
 - (c) Beginning independent practice activities in the form of home work, providing feedback and reinforcement.

ACADEMIC INPUTS

- (a) Basic mathematical concepts were taught through drill exercises from concrete to semiconcrete to abstract stages.
- (b) For Language—A list of basic sight words was prepared and taught.

Drill exercises were given in decoding activities (Rosner, 1985).

High interest-low vocabulary story books were used to encourage independent reading.

Add-a-word Program (McGuigan, 1975) was used to improve the spelling skills. In this programme the student is given a list of spelling words and as he masters the word, new words were added.

To improve the handwriting charts were maintained showing the date, time taken and the number and type of mistakes committed. The length of the passage given everyday was kept constant. Reinforcements were used whenever the performance showed improvement.

- (c) To improve the perceptual motor skills, training was given in drawing straight lines, curves, circles, angles and three dimensional figures, first with appropriate aids and later without them.

Results

Out of 105 students screened 29 students were identified by their teachers as poor performers which gives a prevalence rate of 28 per cent. The 10 randomly selected students for remedial education were in the age group of 9 to 10 years. There was one girl in this group. In WISC their performance showed that the average verbal

TABLE 1

Arithmetics : Pre-post Treatment Scores On Modified Schonell's Arithmetics Test

Measure	Pre		Post		<i>t</i>
	Mean	SD	Mean	SD	
Schonell's Arithmetic Score	17.1	9.63	29	8.53	10.82*

* $P < .01$

TABLE 2

Language : Pre-post Treatment Scores On Reading, Writing, Spelling And Comprehension

Measure	Pre		Post		<i>t</i>
	Mean	SD	Mean	SD	
(i) Reading (Errors made)	12.1	3.31	4.8	3.22	8.05**
(ii) Reading (Time taken in sec)	52	19.32	33.5	8.18	4.13**

TABLE 2 (Conti)

(iii) Writing (Time taken in min)	19.5	4.17	17.6	4.28	6.86**
(iv) Spelling (No. of correct responses)	5.2	2.78	7.6	2.72	2.79*
(v) Comprehension (No. of correct responses)	6.3	3.83	13.3	3.59	6.85**

* $P < .05$ ** $P < .01$

TABLE 3

Perceptual Motor Skills : Pre-post Treatment Of Bender Gestalt Test and Developmental Test of Visual Motor Integration.

Measure	N=10					
	Mean	Pre SD	Mean Post	SD	t	
(i) BGT		3.8	2.66	1.2 0.79	3.98**	
(ii) DVMI		19.3	2.11	20.7 1.56	2.29*	

* $P < .05$ ** $P < .01$

IQ was 95, performance IQ was 88 and the full scale IQ was 91.

Table 1 shows the means, standard deviations and t value of pre-post treatment scores of arithmetics. The result shows that there is significant improvement in the performance of students after remedial education.

Table 2 shows the means, standard deviations and t values of pre-post treatment re-

sults of language. Language scores include reading-errors made while reading the first standard text, and time taken, writing time taken to copy approximately 80 words from a fourth standard textbook, spelling and comprehension. The results show that the students' performance has significantly improved in all the areas of language.

Table 3 shows the means, standard deviations and *t* values of pre-post treatment scores of perceptual motor skills. This includes Bender Gestalt and Developmental Test of Visual Motor Integration Scores. The result shows that there is significant improvement in perceptual motor skills after the treatment.

In Rutter Proforma - B, out of 10 students, one was identified as disturbed emotionally.

Discussion

Wallace and Larsen (1978) state that many handicapped learners have difficulty learning mathematics and students experiencing mathematical problems can be found at all age levels. During preschool and the primary grades many children have trouble matching or sorting objects, differentiating various sizes and understanding the language of mathematics. During the elementary grades the student with mathematical difficulties most likely encounter problems in the basic concepts of addition, subtraction, multiplication and division. Failure to understand basic concepts in beginning mathematics instruction contributes heavily to later learning problems in arithmetics. In the present remedial education the learning sequences were arranged in hierarchies. They started with simple addition and went on to learn graded division. As the students progressed in this ordering of arithmetics task, the learning of skills and content transferred from each step to the next higher step. With sufficient explanation of concepts and drill exercises, it was found that the students can master the basic mathematical processes within 20 sessions of remedial education.

Language has many components and some of the components such as reading, writing, spelling and comprehension are directly related to academics. Educators regard successful reading as the most significant common denominator of adequate achievement in many areas of the curriculum. Nonetheless, millions

of students experience difficulty in reading. Haris and Sipay (1980) estimate that approximately 10 to 15% of the general school population have reading disabilities. The results indicate that by teaching them sight words and giving them drill exercises in decoding exercises, it is possible to show significant improvement, in reading skills. The students during the initial assessment could not read even the first standard passage. At the end of the remedial education, almost all of them could go over to second standard level of reading. As the time log indicates that even their fluency in reading improved.

Spelling is believed to be a more difficult task than reading since there is no opportunity to draw contextual clues. A student who is unable to decode words in reading will almost always perform poorly in spelling as well. The common errors exhibited by the students during the assessment were additions of unneeded letters, omissions of needed letters, reflections of mispronunciations, letter order confusion and final consonant changes. It is shown that the students do improve in spelling skills with sufficient exercises in decoding and drill exercises in directly learning the spelling of familiar words.

Classroom instruction in handwriting usually begins in kindergarten. Readiness activities such as tracing, coloring and copying are emphasised at first. Then instruction is given on the formation of letters, numbers and words. Many students with learning problems have difficulty with handwriting. Several contributing factors have been identified. They are motor problems, emotional problems, faulty visual perception of letters and words and poor visual memory. It was found that the students selected for remedial education were rather slow in writing. This is very liable to interfere with their academic work. For example they may not be able to copy down from the board within

the time given by their teacher. During the remedial education behavioural charts were maintained and reinforcements were used. It was found that due to constant monitoring the speed of writing did improve.

Reading includes two basic processes : a decoding process and a comprehensive process. The decoding process involves understanding the phoneme-grapheme relationships and translating printed words into a representation similar to oral language. Thus decoding skills enable the learner to pronounce words correctly. Comprehensive skills enable the learner to understand the meaning of words in isolation and in context. Students with reading handicaps typically experience difficulty with both types of skills. To improve the comprehension process, in the present study high interest-low vocabulary story materials were used. It was found that their ability to read and answer the questions regarding the passage improved in the course of time.

The relation of perceptual motor skills to academics have been much discussed. Connor (1969) found a significant difference in Bender Gestalt performance between children with well developed reading skills and children with difficulties in reading. He also argues that the total developmental Bender test scores can discriminate between groups of well functioning pupils and groups of children with reading disabilities. So an attempt was made to improve the perceptual motor skills during the remedial education. The students were given exercises in drawing curves, circles, square, two dimensional figures, etc. and it was found that their error score in Bender Gestalt test decreased and the score in developmental test of visual motor integration increased.

Many children who have learning problem are burdened with accompanying emotional problems. These emotional problems take such

forms as low self-esteem, low frustration tolerance, impulsivity, hypersensitivity to failure and maladaptive coping strategies. Questions of etiology-whether the emotional problems are secondary to the learning disabilities and/or whether problems in both domains of functioning have a common substrate are still being debated. In the present sample one student was identified by the teacher as emotionally disturbed. He was withdrawn, shy and verbal output was minimum. It was found that he was constantly compared with his younger sib and teased as a dull fellow. The teacher concerned and his parents were counselled regarding the nature of his problem and the need to give him positive reinforcements. During the remedial education session he was often invited to come front and narrate stories to other children. He was given positive reinforcements by the other group members after his every attempt to come forward and speak. It was observed that he gradually came out of his problems and started mixing with other students in the groups. It was noted that he also made good improvement in academics.

In the elementary school level, it is the language and arithmetics that is given importance and hence the remedial education was focused on these two areas. The present study highlights that systematic efforts by teacher/parents and remedial teachers can help the learning disabled students to overcome their difficulties. The present study also supports the proposition that every school should have a resource room wherein the learning disabled students could spend an hour everyday either individually or in groups and join the rest of the students during the regular class hours. This way the learning disabled students can cope better with their academics without getting segregated.

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Should Your Child be Left-handed

ASHOK K. SRIVASTAVA

EVER SINCE the Biblical times negative qualities were attributed to the man's left-hand and honors, virtues and powers were ascribed to the right -hand. The recent literature has indicated different patterns of cerebral hemispheric specialisation between right-handed and left-handed individuals (Rasmussen & Milner, 1976; Springer & Deutsch, 1989) and these variations have been observed to be detrimental to left-handers (Kinsbourne & Hiscock, 1978 ; Whittington & Richards, 1987). The purpose of the present paper is to review the studies related to the etiology and incidence of left-handedness and to present a description of the possible association of left-handedness with cognitive abilities, personality and other related dimensions. This would be helpful in the early prediction of children "at risk" and for their effective remediation.

After almost a century of research on the basis for human handedness, the prospectus of full consensus seen distant. A major dividing line is one between physiological and/or genetic models (Annett, 1964; Levy & Nagylaki, 1974; Newman, 1928) and those models which emphasize environmental factors generally

(Morgan & Corballis, 1978; Collins, 1969) or specific factors such as birth trauma (Bakan, 1971, 1973). The prevailing view among researchers seem to be that human handedness is primarily biologically determined but can be altered by socio-cultural forces (Bradshaw & Nettleton, 1983; Bryden 1982; Saunders & Campbell, 1985). A detail analysis of these factors would make the position more clear.

1. Physiological and/or Genetic Factors

(a) *Cerebral Asymmetry and Handedness*: It has been demonstrated and consistently observed in neuro-psychological research that left and right hemispheres of the brain are structurally and functionally different. The left-hemisphere is anatomically large and specialized for linguistic and sequential functions (Geschwind, 1975; Nottebohn, 1979), whereas the right hemisphere is specialized for nonlinguistic, visuospatial functions (Bogen, Dezure, Tenhouten & Marsh, 1972). The differences in the functions of left and right hemispheres (for details, Raina, 1984) have been established through five different paradigms, namely, (a) dichotic listening of verbal and non-verbal

stimuli, (b) tachistoscopic viewing of verbal and non-verbal projections, (c) electro-physiological activity following the presentation of linguistic and non-linguistic stimuli, (d) manual identification of linguistic and non-linguistic forms, and (e) identification of somatosensory stimulation (Hahn, 1987).

Traditionally, hemispheric asymmetries were considered dichotomous. Today, the generally accepted view is that there is a continuum of functions between the hemispheres, rather than a rigid dichotomy, the differences being quantitative than qualitative. Another consistently observed finding is that motor control (both fine and gross) in the human brain is contralateral to the side being controlled (Corballis & Morgan, 1978; Geschwind, 1975). If verbal processing takes place in the left-hemisphere and if motor control is contra-lateral to the side being controlled, writing, which is a verbal behaviour as well as a motor skill, would be most efficiently performed with the right hand. The relationship between the two, however, is not one to one.

A number of investigators have concluded that virtually all right-handers are left-lateralized for language and 50-57% left-handers manifest right hemisphere language processing (Roberts, 1969; Zangwill, 1967). However, an appreciable number apparently have bilateral language function (Hecaen & Sauget, 1971). Additionally, there is evidence that bilaterally represented groups can be sub-divided on the basis of whether both hemispheres have the same or different language functions (Rasmussen & Milner, 1976). Data do indicate that hand preference is not predictable directly from, nor strongly correlated with, anatomically definable asymmetries in the brain. There are, however, some detectable differences between the groups. Right handers have more asymmetrical brain structures as a population. Left-handers are more likely to show no differences

between the left and right side of the brain. Porac and Coren (1981) conclude that "right handedness is more likely to be a consequence of (or a correlate with) an organized, asymmetrical brain structure whereas left-handedness is more likely the result of a less differentiated, symmetrical brain structure" (pp.56).

(b) *Annett's Cerebral Dominance Model*: : Annett's (1964, 1978 a, b) model emphasized on two alleles, D, which manifests right-handedness, and R which manifests left-handedness. D is usually dominant and R usually recessive. Consequently, dominant homozygotes (DD) are consistent right-handers, with speech being developed in the left-hemisphere (Greenberg & Graham, 1970). Heterozygotes (DR) may use either hand for skilled activities and develop speech in either hemisphere. However, because D is dominant, most of the heterozygotes would develop right-handedness and left-hemisphere dominance. Lastly, recessive homozygotes (RR) are consistent left-handers with speech mainly in their right dominant hemisphere.

The actual distributions of the proportions of D and R in a normal population, as postulated by Annett (1964), would be $D=0.8$ and $R=0.2$. On the basis of Hardy-Weinberg theorem $(r+1)^2$, one could find out the proportions of these genotypes in a given population $DD=0.64$, $DR=0.32$, and $RR=0.04$. This distribution has been empirically confirmed by Annett (1967) in British population. The actual degree of expression would, however, be influenced by many factors including age, sex, and defects of the central nervous system.

The genetic explanation for hand preference, however, has been criticized on the basis of handedness studies of monozygotic and dizygotic twins. A number of investigators have concluded that monozygotic twins show no greater concordance in terms of handedness than do other groups (Corballis, 1980; Springer & Searlman, 1980).

(c) *Family Patterns in Handedness* : Investigators have attempted to study the pattern of hand preference in biologically-related individuals. These family studies (Annett, 1973; 1978; Ashton, 1982, Chamberlain, 1928; McGee & Cozad, 1980) have documented an increase in the frequency of left-handedness in offspring with the number of left-handed parents. Also consistent in these studies has been the finding of a reduced frequency of left-handedness in the parental generation compared with the offspring. The lower frequency of left-handedness in parents has been attributed to reduced cultural pressure over time (Risch & Pringle, 1985; Srivastava & Lalbiaknungi, 1990).

Another consistent finding in the family studies has been a gender effect. Males are more frequently left-handed, among both offsprings and parents. Also, transmission appears to be sex-related; The frequency of left-handedness among offspring of left-handed mothers and right-handed fathers is greater than among offspring of right-handed mothers and left-handed father. The latter finding has been alternatively attributed to maternal transmission (Cavalli-Sforza & Bodmer, 1971; McGee & Cozad 1980; Risch & Pringle, 1980). Alternatively, it can also be argued that since mothers play an important role in the socialization of the child, left-handedness mothers develop tolerance for left-handed in offspring. Neale (1988), on the basis of his twin studies, observes that sex differences in handedness fit a common environmental model of inheritance better than a dominant genetic model.

2. Environmental Factors

(a) *Birth Conditions* : Several studies have examined an association between handedness and birth order (Bakan, Dibb & Read, 1973; Coren & Porac, 1980). Their argument has been that subtle brain damage in the left-hemisphere may cause a change in handedness from right to the

left. First born and children born fourth and later are relatively high-risk cases because the first-born child is typically associated with longer labour and often with the use of instruments, while children born fourth and later tend to be associated with older mothers. These children show higher use of left-hand for various activities (Bakan, 1971). Fox (1985) observed a higher incidence of left-handedness among children born (a) pre-matured, and (b) full term but having experienced birth asphyxia during labour and delivery. On the other hand, left-handed subjects also show a raised incidence of birth complications and learning disorders (Van Strien, Bouma & Bakker, 1987).

(b) *Culture and Handedness*: The incidence of left handedness, however, in a particular society is selectively determined by cerebral dominance inheritance model and cultural pressures toward conformity. (Dawson, 1974). According to Berry (1974), cultural pressures are less in low food accumulating societies, (e.g., hunters and fisherman) and more in high food accumulating societies, (e.g., farmers and shepherds). As a result, the more compliant agriculturists show significantly lower incidence of left-handedness than the permissively socialized hunters. Dawson (1974) reported the incidence of left-handedness in Eskimos (low food accumulators) 11.3 per cent, Scots (intermediate on food accumulation) 7.0 per cent, and Temme (high food accumulators) 3.4 per cent.

Attempts have been made to find out the incidence of left-handedness among different societies. The percentage in western countries, (U.S.A., U.K, Australia, and Canada) has been observed to be 11.8% (Porac & Coren 1981); Italian adults 6.4% (Salmaso & Longoni, 1983); Chinese students 4.5% (Teng et al; 1979); Japanese adults, 3.1% (Hatta & Nakatsuka, 1976); Mizos 7.24% (Srivastava, 1987); Nigerian children 4.51% (Payne, 1981). The distribu-

tional pattern in men and women have been found to be significantly different, the incidence being more in men than women (Payne, 1981; Rice, Plomin, & Defries, 1984; Saunders & Campbell, 1985; Whittington & Richards, 1987). It is suggested that observed sex difference is due to greater Pressure on girls to conform. The defference would be smaller in permissive societies and relatively high in restrictive societies. The rural-urban and age differences have also been reported in Indian Context (Srivastava & Lalbiakungi, 1990).

Development of Handedness

Verbal behaviour in the sense of symbolic language is not a part of an infant's repertoire (Vygotsky, 1962), and it is probably for that reason pre-verbal infants display an approximately 50:50 ratio for right- or left-hand preference (Cernacek & Jager, 1969). True handedness occurs after the beginning of speech, by which it is directed and to which it is linked. In the great majority of cases such handedness persists throughout life (Roberts, 1949).

Few studies have reported that with the increase in age many of the left-handers and ambidextrals adopt right-handedness (McGee & Cozad, 1980; Ashton, 1982). Whittington & Richards (1987) studied 11000 children from the National Child Development Study in America and found that 86 per cent of children were consistent in their hand preference from age 7 to 11 years; and most children who changed were mixed-handed at age 7. The girls were less consistently left-handed than the boys.

Measurement of Handedness

Different techniques have been used to assess the patterns of hand preference. Typically, hand preference assessment batteries have required individuals to perform simple actions in a laboratory or clinical setting. Throwing a ball, writing, holding hammer, picking up a small item,

pointing to an object are some examples of these activities. Any simple unimanual task seems to be usable, and many have been tried. Since the tasks are so simple and familiar, many investigators have employed self-report questionnaire inventories rather than actual behavioural measures. The questionnaire method has been used most extensively since performance batteries are time-consuming and for practical reasons inappropriate in some situations. Further, self-report measures of handedness have been found to be reliable and valid over repeated testing.

Crovitz & Zener, (1962) were the first to construct a 14-item handedness questionnaire, followed by Oldfield's (1971) 10 item and Coren, Porac & Duncan's (1979) 13 self-report items. The basic purpose of these questionnaires was to classify people easily as right or left-handed. Later on it was realised that the number and type of activities on which subjects are questioned would be an important dimension since the nature of data obtained in handedness studies is in part pre-determined and delimited by the instruments used (Borod, Caron & Koff, 1984; Bryden, 1977; Raczkowski, Kalat & Nebes, 1974; Richardson, 1978; White & Ashton, 1976). This has given rise to considerable debate regarding the appropriate length and content for self-report hand preference questionnaires. Provins, Milner & Kerr (1982) are of the opinion that if handedness is determined primarily by environmental factors, considerable variations in preference with task may be expected. Consequently, they (Provins, Milner & Kerr, 1982) have constructed a 75-item questionnaire, followed by Beukelaar & Kronenberg's (1983) 51-item and Payne's (1987) 60-item questionnaires. The results of these studies suggest that the number of inventory items and types of question asked produces a reduction in the strength of hand preference displayed by both right- and left-handers.

Additionally, results of the studies (Bryden, 1977; Porac, Coren Steiger, & Duncan, 1980; Richardson, 1978) indicate that hand preference is not a multi-factorical behaviour, rather it is described by a single factor. Thus it appears that hand preference is a behaviour that is easily measured, either with simple behavioural test or with self-report inventories. Both types of procedures produce similar results and have high classification concordance. It also displays a singular, unitary structure, and the various specific items and the techniques of assessment are highly correlated and uniform in nature.

Handedness and Deficit

Cognitive Abilities: As has been argued earlier, if cerebral asymmetry hypothesis is correct, i.e., each hemisphere contributes to mental processes through separate and specialized capabilities, and motor control is contra-lateral to the side being controlled, right and left-handed children would show different cognitive capabilities. There is a huge body of research demonstrating that the two sides of the brain seem to be biased toward greater or lesser proficiency in certain cognitive tasks. Hecaen & Albert (1978) have summarized the results of over 40 years of clinical research during which investigators have studied the patterns of cognitive deficits resulting from right or left hemisphere lesions. They report that left-hemisphere contains the neural substrate necessary for language and non-verbal forms of communications, such as signs or gestures. It also deals with the analysis of perceptual stimuli that can be easily labeled as verbal. The right hemisphere seems to be specialized for non-verbal, perceptual, and spatial functions. It has also been reported that split-brain patients are unable to identify verbally pictures of common objects which are projected in the left visual field and processed by the right cerebral hemisphere, the same patient has no difficulty naming pictures when they are

presented to the right visual field with left hemisphere processing (Springer & Deutsch, 1989). Studies employing visual stimuli have produced a left-visual field (right-hemisphere) advantage for tasks requiring spatial/non-verbal abilities (Kinsbourne, 1978).

The above relationship have been observed using several methods. One such method is selectively incapacitating one cerebral hemisphere, either through electroconvulsive shock or the injection of sodium amytal. By doing so one can study the impairment or lack of impairment of speech production and language production and processing when only one hemisphere is active. It has been found that only 1-4% right-handers display right hemisphere speech functions, while the remaining, 69-99% show localization of speech in the left hemisphere (Milner, 1974; Warrington & Pratt, 1973). In left-handers the incidence of right hemisphere speech has been shown to be 25%, which is six times greater than that found for right-handers. Another method is the observation of speech disorders in aphasic patients. Aphasia is a term that describes a variety of language disorders in aphasic patients. If the hemispheric locus of the lesion is known, the resulting pattern of speech disorder, its type, and the eventual recovery or lack of recovery can also be known. Observations of this type suggest that the occurrence of aphasias varies as a function of the side of the injured hemisphere and the handedness of the individual (Hecaen & Sauguet, 1971).

However, the relationship between hemispheric asymmetry and handedness does not seem to be so straight. Porac & Coren (1981) after reviewing 29 studies found that eleven (38%) studies show no relationship between any manifestation of hand preference and any cognitive ability. Of the 18 studies reporting the results of verbal tests, only six (33%) found significant relationships between verbal skills

and handedness. Four showed superior verbal ability in right-handers, one found left handers to be better, and the last reported that individuals with mixed preference patterns showed the poorest performance on verbal tests. It is clear that this review does not provide strong support for the position that handedness patterns are predictors of variations in verbal ability. Further, there are differences in the results of the studies employing children and adults as subjects. The child data provide no evidence for a systematic relationship between handedness and cognitive ability. The results of the studies employing adults as subjects indicate that handedness and cognitive abilities may covary in adults.

Another way of examining the handedness effect would be to find out the incidence of left-handedness in various disciplines. If the cerebral asymmetry hypothesis is correct by one would expect higher incidence of left-handedness among scientists, mathematicians and related disciplines. Researches have confirmed such expectations (Williams, 1987). Geschwind & Galaburda (1987) observed left-handers, to be over-represented in a sample of mathematicians, musicians, artists, athletes, and professional people. Harvey (1988) observed a higher incidence of left-handedness for male science students.

Research has yielded a significant positive correlation between creativity and inferred right hemispheric learning style (Denny & Wolf, 1984; Masten, 1989; Torrance, 1981, 1982) and a significant negative correlation between creativity and inferred left-hemispheric learning style (Torrance, 1981, 1982). In addition, those with a right-hemispheric learning style had higher scores on creativity (Kaltsounis, 1979; Torrance & Mourad, 1979).

A higher incidence of left-handedness has been observed in sport population. For tennis and fencing the incidence of left-handedness is

respectively 15% and 38% (Azemar, et al, 1983). The percentage of left-handedness among fencers (ranging from 35% to 100%) is extremely elevated in comparisons to normal population (Bisiacchi et al., 1985). This is probably due to the superiority of right hemisphere on attentional tasks (Geschwind, 1982).

Personality Problems: Left-handers, on the one hand, have been found to be superior on one type of cognitive activity (propositional thought), studies, on the other hand, have shown an association between being a left-handed and being at risk for a number of problems, such as, anxiety (Dillon, 1989), alcoholism (London, 1987), breast cancer (Kramer, Albrecht, & Miller, 1985), autism (Springer & Deutsch, 1989), smoking (Harburg, 1981; Harburg, Feldstein & Papsdorf, 1978), alexithymia (Raden Hauser, Khamis & Faryna, 1986), extraversion (Lester, 1987), allergy (Smith, 1987), dementia of the Alzheimer's type (Naugle, Cullum, Bigler & Massman, 1987), homosexuality (Lindesay, 1987), etc.

After having discussed the etiology, incidence, and correlates of left-handedness, one really wonders whether children should be allowed to be left-handed. It can be seen that the relationship between left-handedness and cognitive abilities is not very clear and conclusive. However, to some extent one may assume that right-handed children do perform better on successive tasks and left-handed children on simultaneous tasks. It indicates that children belonging to both the groups outperform one-another on one or the other cognitive tasks. Consequently, from cognitive side we can be liberal and allow our children to use the hand of their choice. On the other hand, when we examine the relationship between left-handedness and personality, the situation seems to be alarming. But it should be remembered that studies, examining the effects of left-handedness on cognitive functioning, are mainly ex-

perimental in nature, while studies relating left-handedness and personality variables are correlational in nature and one cannot say with certainty that such relationship does exist. The relationship between the two needs to be examined further and validated cross-culturally. This becomes more important for the fact that

the incidence of left-handedness in many societies has been observed to be increasing. It is desirable that parents and teachers have a clear picture about the impact of left-handedness on cognitive, motivational, personality, and other aspects of human behaviour.

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Impact of Television on Life Style of Children

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TELEVISION is the newest electronic medium having an edge over rest of the mass media because of its multisensorial appeal and also its capacity to overcome the barriers of illiteracy. The phenomenal rise in the availability of TV sets has certainly made an impact on the lives of people. The issue is more pertinent for children because they are more vulnerable than adults. In view of the fact that exposure to TV is increasing every day and more and more children are being attracted to TV as a major source of entertainment, it is only natural that the TV will affect the life and behaviour of children. However, in order to draw any definite conclusions regarding the impact of television on children, it would be imperative to assess the magnitude, intensity and durability of the effect.

In countries where television has been in existence for a long time, a large number of studies have been conducted to investigate its impact on children. The findings of these studies present substantial evidence to suggest that TV viewing is not a passive activity. Constant zoom in and zoom out, loud music and special effects, create a new variety of perceptual expe-

rience for the child. During the process of TV viewing the child is also involved in sequencing, integrating the events, inferring motives and feelings of the characters shown on the TV screen. Thus cognitive processes like comprehension and recall are constantly present.

The basic issues relating to cognitive processing in relation to the structural format of television have also been studied (Singer 1980, Singer and Singer 1976, 1983, Tower, Singer, Singer and Biggs 1979). The possibility of particular types of programmes in stimulating imaginativeness, positive emotionality and greater social and ethical awareness have been explored. The results of these studies highlight the potential of TV in teaching children both pro-social and aggressive behaviour. However, the imitations of aggressive behaviour seems to generalize more extensively whereas pro-social behaviour is more specifically and narrowly enhanced by television exposure (Heard, 1979). Wright and Huston (1983) studied the effect of formal features of the programmes such as action, pace, visual techniques etc. on the attention, comprehension and social

behaviour of children. They concluded that potential of TV in enhancing the development of the child has not been adequately tapped.

The mediating role of the adults in mitigating the negative influence of television and promoting positive influences has also been demonstrated by many scholars. Discussion with parents or other adults during TV programmes or after it, has been found to be significant in controlling the effects of television viewing. Through TV the child is getting across a world view, which is very different from the real world. The filtering of this experience by an adult helps the child to develop a more realistic worldview. However, the television as a medium of learning has yet to be accepted and parents need to be trained in the use of this powerful medium (Singer and Singer 1983).

While a large body of research evidence is available in the developed countries very little parallel information is available about the television viewing behaviour of the Indian children. Due to the availability of many channels and a very large variety of programmes in the developed countries, the TV viewing is qualitatively and quantitatively different there as compared to India. The need to build a data base on television viewing behaviour of Indian children therefore cannot be over emphasized.

In order the study the role of television in the lives of children in India, the National Institute of Public Cooperation and Child Development undertook a research study on TV viewing among children of Delhi schools. The main objectives of the investigation were to:

- I) study the viewing behaviour of children in terms of A) duration of viewing; B) programme preference;
- II) delineate the factors influencing TV viewing among children;
- III) determine the relative importance of the factors influencing TV viewing among children;

- IV) study the impact of TV on the daily life of children; and
- V) study the perceptions of parents regarding TV viewing of their children.

This article is based on some of the salient findings of the study, specifically those related to the impact of TV on day to day life of the children.

Methodology

Sample: The sample of the study was selected from primary and secondary schools of Delhi run by Municipal Corporation and Delhi Administration respectively. The children studying in classes IV, V, VI and VII (approximate age group 8-12) were selected for the study.

A two stage sampling procedure was followed. In the first stage 44 schools; 15 primary and 29 secondary were selected by random sampling. In the second stage of sampling, 754 children were selected; 254 from primary schools (classes IV and V) and 500 from the secondary schools (classes VI and VII).

The mothers of these 754 children constituted the sample of mothers. The break-up of sample children is given in table 1.

TABLE 1

Sample Of Children			
Grades	Boys	Girls	Total
4-5	135	119	254
6-7	250	250	500
Total	385	369	754

These schools were situated in resettlement colonies, localities of old city and suburban areas. Children attending the schools were mostly

from middle and lower middle class background,

Method

Two separate interview schedules were constructed for interviewing the children and the parents. For measuring the duration of viewing "Programme recall" method was used. A list of all the programmes transmitted on TV during the period of data collection was prepared. The children were asked what programmes they watched on week days, Saturdays, and Sundays. The duration of viewing was computed for weekdays, Saturdays and Sundays separately.

Information on other aspects of TV viewing was collected with the help of two interview schedules, prepared for children and mothers. The children were interviewed in the schools and mothers at their houses.

Findings

DURATION OF VIEWING

The information collected in the present study suggested that the children do not watch television with equal frequency throughout the week. Much more viewing was reported for Saturdays and Sundays than on weekdays. On weekdays, on an average, the children spent about one hour and eighteen minutes, whereas on Saturdays 3 hours and on Sundays 5 hours were spent on TV viewing. Thus almost one third of the total viewing time was devoted to television on Sundays. Similar findings were also reported in other surveys (Chawla 1986, Khurana 1987).

TIME SPENT ON VARIOUS ACTIVITIES

As reported by mothers in terms of proportion of time spent on day-to-day activi-

ties like playing, studying, TV viewing, reading books, magazines, etc., meeting friends and household work, maximum time was being spent on studies and play. Younger children spent maximum time on play whereas in case of older children most of their time was taken away by studies. After play and studies, the maximum time was being spent on TV viewing. Thus TV viewing seems to be an important activity in the lives of the children on which they spent a lot of time. According to mothers more time was spent on TV rather than meeting friends or reading books.

RESCHEDULING OF DAILY ACTIVITIES

The data of the present study show that TV has certainly affected the life style of children in a number of ways. It could be seen in table 2 that 57-77 per cent of the children have rescheduled their eating, sleeping, study and play activities according to the TV programmes. Maximum rescheduling has been reported in case of play. Seventy-seven per cent of the children said that they organize their play activities according to TV programmes. Minimum changes were reported for "eating" probably because they eat while watching TV.

TABLE 2

Rescheduling Of Daily Activities To Watch TV
(Reported by Children)

N=754			
Activities	Boys %	Girls %	Total %
Study time	60.1	63.8	61.9
Sleep time	58.3	66.1	62.1
Eating time	55.0	60.2	57.5
Play time	76.8	78.0	77.3

The details of rescheduling the specific activities are as follows.

Study time: The routine of studying and doing school work has changed a lot since the TV came into being. Sixty-two per cent of the children reported that they have adjusted their study hours according to the TV programmes. In a majority of the households (73%) the parents insisted that the children should finish their "home work" before TV is switched on. When asked what do they do while watching TV, more than one third of the children (37%) reported that they do their school work. But when they were asked directly whether they study while TV is on, 56 per cent denied doing so, 35 per cent said that they occasionally do their school work while TV is on and a small number (7%) admitted that it is a habit with them to do the school work while TV is also on. Narayanan (1983) also reported that the children adjust their study hours in such a way so that they can see their favourite TV programmes. Khurana (1987) reported that study hours declined considerably when the popular programmes like films, etc. were being transmitted.

Sleep: As mentioned earlier in table 2, 62 per cent children reported that they have changed their sleep time to watch TV. About 77 per cent of the mothers reported that children sleep late because of television. This was more so for older children (66%) than younger ones (37%).

Play: Maximum dislocation has been reported in the play of children. The data of the present study suggest that a lot of free time on Sundays has been taken away by TV which could probably have been spent on playing if TV was not there. A large number of children (70%) reported that they do not play at all or change their play time on Sundays because of the TV programmes.

PREFERENCE FOR FREE TIME ACTIVITIES

The ranking of the preference for activities for free time shows that younger boys mentioned TV viewing as the most preferred activity. Their fascination for audio-visual media is also suggested by the fact that "watching films" was ranked second by them in terms of preference. The TV viewing received relatively less preference from younger girls (rank 3), older girls (rank 4) and least from older boys (rank 5).

This difference between younger and older children perhaps could be attributed to more attraction of peer groups in the older children (10-12 years) and more mobility especially for older boys. The girls both younger and older gave very high preference to reading books and magazines, (rank 1 and 2 respectively) either because they mostly stay indoors or, they were trying to give socially desirable responses. Chart II provide the mean ranks.

LEARNING FROM TV

The findings suggest that TV is a potential source of learning. It is an active process of selecting, integrating, evaluating and interpreting information according to one's own schema.

In this study the children were directly asked whether they have learnt anything from TV. The younger children could not specify but a majority of the older children (10-12 years) reported having learnt something or the other from TV. Their responses, reported in table 3, indicate that the learning from TV was mainly in 'socially desirable' behaviour like obedience, truthfulness, etc. A small percentage of children also reported having imbibed social messages from TV like ill effects of drugs, evils of dowry, etc. Their responses, point out that TV can be a very potent instrument for teaching pro-social behaviour to children.

TABLE 3

What have children learnt from TV?

N=500

<i>Response</i>	<i>Boys %</i>	<i>Girls %</i>	<i>Total %</i>
1. Morals	21.8	30.3	25.9
2. Hand work & cooking	6.6	12.2	9.3
3. Sports & Games	7.7	3.9	5.9
4. Health & Hygiene	7.7	7.1	7.4
5. Education/Science experiments	4.4	7.5	5.9
6. Consumer products	3.0	2.8	2.9
7. Social messages	3.3	3.9	3.6
7. Others	8.5	3.5	6.1
9. No response	31.8	24.0	28.1

The research studies have also shown that children may learn pro-social behaviour from TV just as they are likely to learn violent and aggressive behaviour too (Hearold 1979). It has also been suggested that the learning from TV is mediated by a number of factors. The interaction with a covieing adult and format of the programme being watched, have been identified as two crucial mediating variables.

The present study revealed that though television viewing is a family activity, very few children (6%) watch TV alone however the discussion about the TV programmes within the family is limited. As indicated in Table 4 a majority of the parents do not discuss TV programmes with their children.

About 50 per cent of the mothers reported that their children rarely/never asked questions about TV programmes (Table 4).

TABLE 4

Whether Children Ask Questions About TV Programmes

N=743

<i>Response</i>	<i>Young</i>	<i>Old</i>	<i>Total</i>
1. Many a times	15.7	8.4	10.6
2. Sometimes	40.6	34.4	36.3
3. Rarely	5.7	15.4	12.4
4. Never	36.2	41.2	39.7
5. NR	1.7	0.6	0.9

Not many parents took initiative to make TV viewing a learning process. More than half (56%) the sample mothers said that they do not make any effort to encourage their children to ask questions about TV programmes. Though about 35 per cent made some effort in this direction.

From these findings it appears that TV as a medium of learning is yet to be accepted and the parents need to be informed/trained as to how this powerful medium can be utilized to promote the development of their children.

IMPACT OF TV COMMERCIALS

Learning from TV is not limited to only positive and pro-social behaviour. The heavy TV viewing has also been linked with aggressive and violent behaviour. One more negative effect of TV is the impact TV commercials make on the impressionable minds of young children. It is believed that TV commercials foster consumeristic values in children and make them more demanding.

The commercials present intense auditory and visual stimuli. They are intended to keep the attention of child viewer by rapid activity,

change, noise and various special effects. In the present investigation it was found that almost all the children watch TV commercials. However, when they were asked to recall some of the brand names, they could list very few. Table 5 shows that younger children (8-10 years age) could recall very few brand names. Even older children (10-12 years) could not recall many brand names. Comstock in his study found that American children (as young as 6 years) could recall the brand names of 20 or more items in a period of 15 mts. (Comstock, 1980).

TABLE 5

Distribution of children according to their recall of products advertised on TV

N=754

Recall of products	Younger %	Older %	Total %
Cannot name any	26.2	1.5	16.8
No response	1.3	0.6	0.9
1-2	16.2	11.0	13.6
3-4	34.5	24.4	29.5
More than 5	23.1	57.1	40.1

To probe further, the "aided recall" method was used. The children were given 15 brand names of the most frequently advertised products and were asked whether they have heard about them. For example, they were asked "Have you heard about 'Nirma' What is it', from where have you heard about it? etc. The analysis of their responses showed that more than 80 per cent of the children knew about 11-15 products correctly. Again the difference between younger and older children was marked. Among younger children only 54 per cent could tell correctly about 11-15 products as against 83

per cent of older children. About half (45%) of the younger children could tell about only 6-10 products. Following table illustrates:

TABLE 6

Distribution of children according to the number of products known to them

N=754

Number of products recalled correctly	Younger %	Older %	Total %
0-5	4.8	0.8	2.8
6-10	41.0	16.0	28.5
11-15	54.2	83.2	68.7

The inability of the children of this sample to recall a large number of commercial products shown on TV, could probably be attributed to the formats of these commercials. Rapid pace of presentation of material, less dialogue and frequent use of English language or very urban concepts are probably creating a perceptual experience which is very new to the children of this sample who belong to lower middle class. The findings could be entirely different for children from higher socio-economic strata. The possibility of such behaviour has been acknowledged by some other authors. They believe that cognitive processes take place over a period of time. Effective learning and storage of material presented requires some replay and rehearsal with an occasional opportunity to shift our attention from the TV and reflect on what has been seen. If new material is piled on top of other material, one cannot intelligently re-examine what has been seen (Wright and Houston, 1983, Collins, 1982). This is what appears to be happening to the lower middle

class child viewer in this study. The barrage of auditory and visual stimuli about new and alien subjects (the new products) are not allowing the child to absorb what is being conveyed through the commercials. This explanation is further confirmed by the finding that the recall of brand names was much less in younger chil-

dren than older ones.

About half the mothers interviewed in the sample felt that TV commercials do not affect their children but a substantial number (N=303, 39 per cent) expressed their concern about the effects of TV commercials. Following table illustrates:

TABLE 7

Effect of TV commercials on children

Response	Younger			Older			Grand total
	Boys	Girls	Total	Boys	Girls	Total	%
	%	%	%	%	%	%	
Yes	33.3	41.7	37.6	41.1	43.4	42.2	39.3
No	52.6	47.0	49.8	46.8	49.8	48.2	49.0
NA	14.0	11.3	12.6	12.2	6.8	9.6	11.1

A small number of mothers categorically said that the children have become more demanding. Others felt that children demand specific brands. Their responses indicate that TV commercials have fostered consumeristic values in children, though the impact is not very marked yet. The mothers were also concerned with the type of "exposure" commer-

cials are giving to their children. The dresses and behaviour of models is not always in consonance with their own social values and when children try to imitate these 'models' parents feel concerned. Some mothers were also concerned about some specific commercials which they considered as obscene, these related to some cosmetics and family planning devices.

TABLE 8

Types of effects TV commercials have on children

N=303

Responses	Younger		Older		Total	
	f	%	f	%	f	%
1. Demand particular brands	31	36.0	87	40.2	118	38.9
2. Demands increase	13	15.1	58	26.5	71	23.5
3. Wider choice	17	20.0	32	15.0	49	16.0
4. Imitates models	17	20.0	32	15.0	49	16.0
5. Exposure to obscene ads	8	9.3	8	3.7	16	5.3

The children, mostly demand eatables and cosmetics, perhaps because they know that parents can afford them. Table 9 shows the type of products, children demand.

TABLE 9

Type of products children demand

Products	f	%
1. Eatables (Biscuits, gums, toffees, sauce)	165	55.0
2. Soaps (Keshnikhar, Vigil, Marvel etc.)	157	52.3
3. Cosmetics (Shampoo, Hair oil, Toothpaste)	123	41.0
4. Cold drinks	64	21.3
5. Health drinks	42	14.0
6. Play things	16	5.3
7. Dress material	12	4.0
8. Others	59	19.6

The mothers very categorically said that some commercials and the messages relating to family planning should not be shown on T.V. These,

they felt, are bad influences for their children. The reasons for parents wanting to ban these commercials are given in table 10.

TABLE 10

Reasons for banning certain commercials on TV

	f	%
1. Exposure to adult world	110	44.0
2. Embarrassing to see with children	91	36.4
3. Children ask embarrassing questions	52	20.8
4. Alien to our culture	7	2.8
5. Evoke fear	7	2.8
6. Increasing demand	5	2.0

This finding has crucial implications. TV no doubt, is the most powerful medium for communicating important messages to a large number of people. But the messages relating to

contraceptive are being resented by people as in the Indian context these are very private issues and not discussed in front of children.

Discussion

The findings of the present study clearly show that TV has assumed a very important position in the lives of the children, though it has not yet acquired the "nuisance value" as in other countries. This is mainly due to the fact that transmission time is limited and many of the programmes do not hold the interest of children. The viewing is limited with the exception of Saturdays and Sundays when transmission is longer, programmes are interesting and therefore viewing is more.

The data show that the children have reorganized many activities of daily life according to TV programmes. Though it has not been established that play, reading and extra-curricular activities have been reduced due to TV programmes. However, the reduction in play on Sundays is indicative of the possibility of TV taking priority over play. The study suggests that if the programmes are interesting, the children may sacrifice other activities in favour of TV viewing. This is more so in case of younger children.

The impact of commercials on children is quite evident. They have started demanding particular brands of products advertised on TV. Once again this influence is regulated by the fact that many advertisements are in English, depicting western style of living and are targeted at urban elite. These are quite alien to an average child from the lower middle class who cannot identify with them.

Efficacy of television in creating awareness about social problems is also evident by the fact that children are learning about social evils like dowry, drugs etc. Thus the effectiveness of TV in fostering pro-social behaviour and socially desirable attitudes has been suggested.

However, the sensitive subjects like 'family planning' when shown on TV embarrasses the parents. This needs to be looked into in the context of socio-cultural milieu of our country.

The learning from TV is very limited, although a lot of educational programmes are being transmitted. Probably because children are just passive listeners and not active learners. The interaction and discussions with the adults, which is a critical determinant of learning from TV, has been found to be rather low in the present sample. Thus the potential of TV as an important instrument of learning has not yet been accepted and exploited.

These findings suggest the need for informing and educating the parents regarding how TV can be made a learning experience.

However, while studying the impact of TV the context of total life of the child cannot be overlooked. Professionals and parents want children to play more, read more and protect them from undesirable exposures. But on the other hand, the opportunities for play and recreation are so limited. It was found that a large number of children watch movies on video, which is much more harmful than TV. The girls are not permitted to go out to play and therefore have to seek entertainment within the house itself. TV is convenient, easily available, healthy entertainment for most of the families and therefore there is very little effort to control viewing. So far as parents are concerned if TV viewing does not affect the studies adversely, they do not mind the child viewing it.

It is high time the tremendous potential of TV as an instrument of learning and its role in fostering the development of young child is acknowledged and exploited.

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Psychosocial Development of Children during Adolescence

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ADOLESCENCE is a period of change. These changes require effective coping on the part of the individual and respond to the challenges throughout the life. The challenges encountered in this period are different when compared to the earlier years. Early maturers and those unprepared for menarche are most likely to have negative psychological outcome (Ruble and Brookes—Gunn 1982). The percent prevalence of young people who develop psychological difficulties needs to be studied. If all adolescents do not experience difficulties which one do develop problems? Gender differences appear to be important here. Adolescent boys with psychological difficulties are likely to have had problems in childhood; girls in contrast are more likely to first manifest psychological difficulties in adolescence (Ebata 1987). Others have found that girls appear to have more depressive feelings in the adolescent period (Rutters 1986). By age 17 they have significantly poorer emotional tone and well being than boys (Peterson 1987b). The causes of different developmental patterns for boys and girls remain to be elucidated.

A recent study of adjustment of college students in relation to their anxiety and intelligence illustrates that high and low intelligent students differ significantly in personal and social adjustment. It was reported that girls were more sociable than boys. Anxiety played a key role with adjustment. Less anxious students had positive attitude to life and personal work than the high anxious ones (Bhagaban Subudhi 1990).

Poor micro and macro environment also influences the psychological well-being of the children. The low IQ seen in severely malnourished children who have small stature and who came from deprived socio-economic backgrounds is more an expression of the poor environment than of poor nutritional status. An acute episode of malnutrition during the first two years of life is unlikely to affect the intellectual development in later life, if the child grows up in a favourable environment, in contrast to a child who is reared in unfavourable environment with a malnutrition episode. In the latter case, the degree of malnutrition has a direct influence on the impairment of mental development (Galler, et al, 1983, a,b, 1984).

We have limited information on the subsequent growth and development of children malnourished in early life. When they grow into young adults does the deficit in the function exhibited at the younger age persist and increase or does it make up? Since adolescence is the twilight zone between childhood and adulthood and is a period of dynamic changes in physical growth and sexual development, does the child adjust to his environment? In this period of life the development is transitional in which a great deal of change, both within the individual and within the social environment takes place (Eichorn et al 1981).

Early adolescence may be a challenging life period, young people traverse it with varying degrees of difficulty, just as in later periods of life. It was found that 11% of young adolescents have serious chronic difficulties, 32% have more intermittent and situational difficulties while 57% have basically positive, healthy development during early adolescence (Ebata, 1987; Peterson & Ebata, 1987). It is characterized by fewer difficulties (Offer & Offer 1975).

One hypothesis that may encompass the findings is that anxiety plays a role in the development of depression. Challenging situations together with greater arousal in such situations, produce anxiety (Seligman & Peterson 1986).

Pubertal timing and pubertal status affects psychological adjustment for later developing boys and girls (Peterson and Crockett 1985). Some researchers say that pubertal change is most stressful when it puts the early adolescent in a deviant status relative to his peers.

Cognitive development and cognitive abilities increase over the adolescent years, particularly to think abstractly (Keating and Clark, 1980; Martorano, 1977; Peterson, 1983). Growth in mental age, or intelligence is thought to slow down during adolescence (Sternberg and Powell, 1983). An interesting meta analyses of the relationship between pubertal timing

and IQ test performance supports the view that early maturers have small but consistent advantage (Newcomb and Dubas, 1987).

Keeping in view the above research findings one can pose the following questions:

With the changing patterns of life how is an Indian adolescent behaving? Does the nutritional status have any affect on his intelligence? How is his adjustment with his parents, friends and himself? Does pubertal changes cause anxiety in him? Does early malnutrition have any effect on the later development? What are the nutritional factors influencing the development of the adolescent?

Study Description

A longitudinal study on growth and development has been in progress at the Institute. All the children in ten villages around Hyderabad who were between 5 and 7 years of age were recruited for nutritional assessment. For psychological study only the children who were between 5 and 6 years of age were selected. They are now 9 to 11 years of age. The present sample comprised 482 children of which 257 are males and 225 are females. They were followed up to study the growth changes, sexual and psychological development in the pre- and post- pubertal period. The present report is based on the psychological data.

Objectives

To study the :

1. Effect of present nutritional status on the psychological development of children during adolescence.
2. Effect of early nutritional status on the psychological development of children during adolescence.
3. Effect of socio-economic status on the psychological development of children.
4. To investigate the inter-relationship between the psycho-social variables.

Hypotheses

1. There is significant effect of the nutritional status (current and/or erstwhile) on the psychological profile of children during adolescence.
2. Socio-economic status has a significant effect on the psychological profile of children during adolescence.

The following tests were administered to the children:

I. PERSONAL DATA SHEET

Information regarding socio economic status of the child was collected. v,iz., education, occupation, income of parents, child's education and occupation, family pathology, etc. This was collected at the beginning of the study.

II. MALIN'S INTELLIGENCE SCALE FOR INDIAN CHILDREN

This is an adaptation of the popular American test (WISC) by Arther Malin of Nagpur embracing all the advantages of the original WISC along with several changes suitable to Indian children. This scale comprises eleven sub-tests. Verbal comprehension, information, memory, spatial relations, etc. are some of the factors assessed by this scale.

III. TEST OF PERSONALITY ADJUSTMENT

Carl Rogers devised a measure to assess the adjustment of the child towards his friends, family and himself. It has four diagnostic scores.

1. Personal inferiority score (PIS): It indicates roughly the extent to which the child thinks himself to be physically or mentally inadequate, i.e., duller, weaker less good looking than his peers.

2. Social maladjustment score (SMS): It attempts to measure the child's group adjustment or maladjustment, i.e., the extent to which he is unhappy in his group contacts, poor at making friends, etc.
3. Family maladjustment score (FMS): The amount of conflict and maladjustment which the child shows in his relations with his parents or siblings.
4. Day dreaming score (DDS): This is designed to measure the extent of the child's fantasy life. It is particularly valuable taken in connection with the other scores as an indication of how the child is solving his problems.

After pilot testing, necessary changes were done to suit the rural population. they were subsequently translated into the local language before launching the main testing.

IV MANIFEST ANXIETY SCALE

This is an adaptation by Alfred Castaneda of the Taylor's Manifest Anxiety scale for adults. This scale measures the anxiety of children. Before commencing the main testing, pilot testing was done and necessary changes were made.

Intelligence test, personality test and manifest anxiety scales were administered twice to each child. In males, the tests were administered once between 11 and 12 years and again after 13 year. For girls they were administered once between 11 and 12 years and again after attaining menarche. The reason for repeating the test is to compare the response of children before and after puberty.

Results and Discussion

Means and Standard Deviations were calculated for all the psychological, socio-economic variables. Analysis of variance was computed

to find out the significant differences. When it was found that F-ratio was significant, Duncan's multiple range test was computed to find out which groups differed significantly.

A sample of 482 children were tested for

psychological development. The testing is in progress and after preliminary analyses the results are presented here. Complete information was available on only 429 children of whom 200 were females and 229 were males (Table 1).

TABLE 1

Distribution of the Sample Under Psychological Testing

Sex	Normal	Grade I	Grade II	Grade III	Total
Males	8	39	129	53	229
Females	6	43	97	54	200
Total	14	82	226	107	429

The average of IQ for boys and girls was 78.7 and 73.8 respectively (Table 2). They fall in the below average category. Boys performed

significantly better on the intelligence test when compared to girls in both the verbal and performance tests ($P < .01$).

TABLE 2

Mean Intelligence Scores of Children

Areas	Males (255)	Females (224)	Total (479)
Verbal Quotient (VQ)	80.9* 8.1**	76.5* 8.3	78.8* 8.5
Performance Quotient (PQ)	76.5* 10.9**	71.0* 11.7	73.9* 11.6
Intelligence Quotient (IQ)	78.7* 8.7**	73.8* 9.5	76.4* 9.4

** $P < .01$

When the personality variables were examined, 15% of the children were found to be highly maladjusted (Table 3). Sex differences

were evident. Girls were highly maladjusted in social and total adjustment areas (Table 4)

TABLE 3

Mean Adjustment and Anxiety Scores of Children

Areas	Low	Average	High
PIS	292(60.6)	159(33.0)	31(6.4)
SMS	61(12.7)	201(41.7)	220(45.6)
FMS	67(13.9)	204(42.3)	211(43.8)
Total (Adj)	162(33.3)	245(50.4)	75(15.4)
Anxiety	122(25)	302(62.1)	58(11.9)

PIS Personal inferiority score

SMS Social maladjustment score

FMS Family maladjustment score

Total ADS Total adjustment score

Figures in parenthesis indicate percentage

TABLE 4

Mean Adjustment and Anxiety Scores of Children

Areas	Males (257)	Females (225)	Total (482)
PIS	10.6*	10.7*	10.6*
	3.4	3.3	3.4
SMS	13.0***	16.0*	14.4*
	4.0	4.6	4.6
FMS	10.0*	10.3*	10.1*
	3.2	3.4	3.3
DDS	1.2*	1.5*	1.4*
	1.4	1.5	1.5
Total (Adj)	34.9*	38.5*	36.6*
	6.8**	7.0	7.2
Anxiety	15.5*	15.6*	15.4*
	7.7	8.2	7.9

** $P < .01$

Figures in parenthesis indicate percentage

The children were assessed for current nutritional status by weight/age and height/age indices. Overall intelligence and verbal and performance indices were better in normal (weight for age) grade I and II boys when compared to grade III boys (Table 5). In girls, performance of normals and grade I children were similar. They were significantly better than grade III girls. It was also found that grade II girls were better than grade III girls. When the children were divided by height/age

method into four nutritional grades it was found that all four groups differed from each other significantly. Normal boys were better in intelligence when compared to grades I, II and III boys in over all intelligence and also in its components. Grade I boys were better than II and III and grade II boys were superior to grade III boys. In girls, it was found that normals were better than grade II and III girls and grade I girls did better than grade III girls and grade I girls did better than grade III girls.

TABLE 5

**Intelligence Test Scores according to Sex and Nutritional Grade—Current Nutritional Status
(Weight for Age and Height for Age)**

<i>Psychological variables(8)</i>	<i>Normal</i>		<i>Grade I</i>		<i>Grade II</i>		<i>Grade III</i>	
	<i>Boys (6)</i>	<i>Girls (39)</i>	<i>Boys (43)</i>	<i>Girls (129)</i>	<i>Boys (96)</i>	<i>Girls (53)</i>	<i>Boys (53)</i>	<i>Girls</i>
Weight for age status								
Verbal	84.4*	79.0*	84.1*	78.0*	81.9*	77.6*	77.3*	73.6*
Quotient (VQ)	8.7	8.8	7.3	9.1	7.6	8.1	7.2	7.3
Performance	87.6*	76.3	80.2*	74.9*	77.6*	72.1*	72.0*	66.7*
Quotient (PQ)	18.9	16.0	9.9	11.0	9.4	10.7	10.4	9.2
Intelligence	85.9*	77.8*	82.0*	76.3*	79.8*	75.0*	74.7*	70.1*
Quotient (IQ)	12.5	11.1	8.1	9.6	7.7	8.9	8.2	7.7
Height for age status								
Verbal	84.2*	77.8*	82.4*	78.2*	77.6*	75.1*	77.4*	71.9*
Quotient (VQ)	7.8	7.9	7.0	8.7	7.2	7.6	8.6	6.6
Performance	82.3*	75.3*	78.1*	71.8*	72.9*	69.6*	69.4*	64.8*
Quotient (PQ)	12.2	11.4	8.9	10.3	9.2	11.5	10.1	5.9
Intelligence	83.2*	76.5*	80.3*	75.1*	75.4*	72.4*	73.4*	68.5*
Quotient (IQ)	9.2	9.2	7.2	9.2	7.6	9.0	8.2	6.0

Table 5 Continued

Duncan's Multiple range test

Weight for Age status	VQ		PQ		IQ	
	Boys	Girls	Boys	Girls	Boys	Girls
Normal Vs I						
Normal Vs II			*			
Normal Vs III	*		*		*	
Gr. I Vs II						
Gr. I Vs III	*	*	*	*	*	*
Gr. II Vs III	*	*	*	*	*	*
Height for age status						
Normal Vs I			*		*	
Normal Vs II	*		*	*	*	*
Normal Vs III	*	*	*	*	*	*
Gr. I Vs II	*	*	*	*	*	*
Gr. I Vs III	*	*	*	*	*	*
Gr. II Vs III						
* P > .05						

Nutritional status did not show significant effect on personality variables except in few instances, like social maladjustment score in males and in females.

To observe the effect of past nutritional status on the psychosocial development, the

children were graded into four nutritional groups. It was analyzed by both height/age and weight/age methods, and was found that the intelligence and its components were influenced by the past nutritional status (Table-6). Looking,

TABLE 6

**Intelligence Test Scores according to Sex and Nutritional Grade—Erstwhile Nutritional Status
(Weight for Age and height for Age)**

Psychological variables	Normal		Grade I		Grade II		Grade III	
	Boys (8)	Girls (6)	Boys (39)	Girls (43)	Boys (129)	Girls (96)	Boys (53)	Girls (53)
Weight for age status								
Verbal	84.0*	78.8*	82.3*	77.6*	80.1*	75.2*	77.1*	70.5*
Quotient (VQ)	9.1	10.1	8.3	8.2	7.6	7.4	7.1	6.2
Performance	80.4*	73.5*	79.1*	73.2*	75.6*	68.4*	68.5*	66.2*
Quotient (PQ)	12.4	13.9	10.9	12.5	9.8	10.1	10.6	4.3
Intelligence	82.0*	76.1*	80.7*	75.5*	77.9*	71.8*	72.6*	68.2*
Quotient (IQ)	8.4	11.3	8.9	9.9	8.0	8.2	7.7	5.0
Height for age status								
Verbal	83.2*	78.8*	82.5*	77.5*	79.1*	75.2*	77.5*	71.3*
Quotient (VQ)	7.9	9.3	8.0	7.9	7.9	7.1	7.0	6.3
Performance	81.0*	75.0*	79.2*	72.0*	73.2*	69.2*	70.4*	63.2*
Quotient (PQ)	10.8	13.7	10.8	10.8	9.5	10.0	10.0	10.0
Intelligence	82.0*	77.0*	80.9*	74.8*	76.3*	72.2*	73.8*	67.3*
Quotient (IQ)	8.3	11.0	8.8	9.0	7.9	7.8	7.6	7.5

Duncan's Multiple range test

Weight for Age status	VQ		PQ		IQ	
	Boys	Girls	Boys	Girls	Boys	Girls
Normal Vs I	*					
Normal Vs II			*	*		*
Normal Vs III			*		*	*
Gr. I Vs II		*	*	*	*	*
Gr. I Vs III	*	*	*		*	*
Gr. II Vs III			*		*	
Height for age status						
Normal Vs I						
Normal Vs II	*		*	*	*	*

Normal Vs III

Gr. I Vs II

Gr. I Vs III

Gr. II Vs III

P < .05

at personality variables, only the family adjustment of girls was affected by nutritional status as assessed by weight/age method. Social adjustment and overall adjustment in males was influenced by height/age. Remaining components of adjustment were not influenced significantly.

When the socio-economic and demographic variables were examined birth order of the child did not have significant effect either on the intelligence or on the personality variables.

Child's education had a positive effect both on the personality and intelligence variables (Table 7). Education was directly

TABLE 7

Mean Intelligence Scores according to Child's Education

	Boys				Girls			
	Nil (28)	1-2 (52)	3-5 (104)	>6 (71)	Nil (99)	1-2 (37)	3-5 (53)	>6 (35)
Verbal Quotient (VQ)	74.4* 5.0	74.8* 5.6	81.9* 6.8	86.4* 7.7	72.0* 4.6	73.4* 4.0	79.7* 7.0	87.6* 9.3
Performance Quotient (PQ)	66.7* 7.5	68.3* 6.6	77.5* 9.2	84.9* 9.6	64.7* 9.0	68.4* 7.1	75.1* 8.0	85.4* 12.5
Intelligence Quotient (IQ)	70.9* 5.8	71.4* 5.2	79.7* 6.8	85.6* 7.8	68.5* 6.1	70.8* 4.7	77.3* 7.0	86.6* 10.3

Duncan's Multiple range test

Education	VQ		PQ		IQ	
	Boys	Girls	Boys	Girls	Boys	Girls
Nil Vs 1-2				*		
Nil Vs 3-5	*	*	*	*	*	*
Nil Vs >6	*	*	*	*	*	*
1-2 Vs 3-5	*	*	*	*	*	*
1-2 Vs >6	*	*	*	*	*	*
3-5 Vs >6	*	*	*	*	*	*

P < .05

proportional to the intelligence and its components, i.e., higher the education better the performance on the intelligence test. Higher education also yielded better adjustment with life (Table 8). It was found that in males significant differences were found in social, family

TABLE 8

Mean Adjustment and Anxiety Scores according to Child's Education

	Boys				Girls			
	Nil (28)	1-2 (53)	3-5 (105)	>6 (71)	Nil (98)	1-2 (37)	3-5 (54)	>6 (36)
PIS	10.4* 3.1	11.4* 3.7	10.3* 3.5	10.4* 3.2	10.7* 3.3	10.9* 3.0	10.5* 3.1	10.7* 3.1
SMS	14.2* 4.6	13.8* 4.3	13.0* 4.0	12.0* 3.4	17.1* 4.9	16.4* 3.7	14.3* 4.4	15.3* 4.2
FMS	10.0* 4.0	11.1* 3.0	9.8* 3.1	9.3* 3.1	10.0* 3.0	10.7* 3.4	10.9* 4.0	9.8* 3.0
DDS	1.8* 1.7	1.7* 1.4	1.2* 1.4	1.0* 1.5	1.6* 1.4	1.2* 1.3	1.7* 1.8	1.4* 1.4
Total Adj.	36.5* 7.3	37.9* 7.2	34.4* 6.6	32.7* 5.8	39.4* 6.4	39.1* 5.3	37.4* 8.0	37.2* 8.4
Anxiety	16.6* 9.3	15.1* 7.3	16.0* 8.4	14.7* 6.1	15.1* 8.3	16.1* 9.5	16.3* 7.8	15.6* 7.3

	PIS		SMS		FMS		DDS		Total Adj.		Anxiety	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Nil Vs 1-2	—	—	—	—	—	—	*	*	—	—	—	—
Nil Vs 3-5	—	—	—	*	—	—	—	—	—	—	—	—
Nil Vs >6	—	—	*	—	—	—	—	*	*	—	—	—
1-2 Vs 3-5	—	—	—	*	—	—	—	*	*	—	—	—
1-2 Vs >6	—	—	—	*	—	—	—	*	*	—	—	—
3-5 Vs >6	—	—	—	—	—	—	—	*	*	—	—	—

* P < .05

and day dreaming areas, i.e., educated boys were better adjusted than the uneducated. In girls, the role of education was not seen as in boys. Educated girls were better in social adjustment and had less day dreaming.

Child's occupation did not have significant effect on the intelligence and adjustment scores but had an effect on the anxiety score (Table 9). It was observed that petty wage

TABLE 9

Mean Intelligence Scores according to Father's Education

	Boys				Girls			
	Nil (108)	Primary (94)	High School (28)	College (14)	Nil (91)	Primary School (78)	High (35)	College (8)
Verbal Quotient (VQ)	77.8* 6.7	81.5* 7.8	85.4* 8.9	89.6* 7.9	73.3* 5.0	77.8* 8.0	81.4* 9.6	86.9* 13.2
Performance Quotient (PQ)	72.5* 8.6	77.3* 11.8	82.1* 9.2	87.8* 9.8	66.7* 8.7	73.3* 11.6	77.1* 11.9	83.6* 18.0
Intelligence Quotient (IQ)	75.2* 6.9	79.3* 8.9	83.8* 8.4	88.7* 8.1	70.0* 6.2	75.6* 9.2	79.4* 10.2	85.3* 15.3

Duncan's Multiple rangetest

	VQ		PQ		IQ	
	Boys	Girls	Boys	Girls	Boys	Girls
Nil Vs Primary	*	*	*	*	*	*
Nil Vs High School	*	*	*	*	*	*
Nil Vs College	*	*	*	*	*	*
Primary Vs. H. School	*	*	*	*	*	*
Primary Vs College	*	*	*	*	*	*
H. School Vs. College	*	*	*	*	*	*

* $P < .05$

earners and domestic servants exhibited more anxiety than the "others" occupational group (i.e. others category consisted of hawker, handicrafts, apprentice) in males. Females who were agricultural labourers had less anxiety, when compared to the others occupational groups.

Father's education had a very good influence on the child's intelligence. The mean scores on the intelligence test increased consistently with the father's education. A trend was observed that children of educated fathers were well adjusted when compared to children

of illiterate fathers. However, this difference was found only in social maladjustment. There was no significant difference in anxiety levels among the groups.

Mother's education played an important role on children's intelligence. It had a direct relationship with child's intelligence, i.e., as the

mother's education increased, child's intelligence also increased (Table 10). Mother's education exhibited some influence on the personality variables in female children. Children of those mothers whose education was of high school level, were better in social and family adjustment.

TABLE 10

Mean Intelligence Scores according to Mother's Education

	Boys				Girls			
	Nil (213)	R/W (10)	Primary (15)	High School (11)	Nil (182)	R/W (9)	Primary (25)	High School (6)
Verbal Quotient (VQ)	79.9*	81.0*	88.4*	92.5*	74.8*	79.1*	84.6*	91.8*
	7.1	5.9	9.8	10.7	6.2	10.1	10.6	14.2
Performance Quotient (PQ)	75.4*	73.8*	85.1*	91.4*	69.1*	72.2*	79.4*	92.3*
	10.2	12.1	9.5	11.3	10.2	9.8	14.0	14.4
Intelligence Quotient (IQ)	77.7*	77.3*	86.7*	92.2*	72.0*	75.6*	82.1*	92.0*
	7.9	8.5	8.9	10.2	7.6	10.1	12.0	14.0

Nil = No education

R/W = Read and write

Primary = Primary school education

H. School = High school education

Duncan's Multiple range test

Education	VQ		PQ		IQ	
	Boys	Girls	Boys	Girls	Boys	Girls
Nil Vs R/W						
Nil Vs Primary	*		*	*	*	*
Nil Vs High School	*	*	*	*	*	*
R/W Vs Primary	*				*	*
R/W Vs H. School	*	*	*	*	*	*
Primary Vs H. School		*	*	*		*

* $P < .05$

It was observed that children of those fathers who were in business and in service were more intelligent when compared to the other parental occupations like farming, skilled and unskilled labour (Table 11). Father's

TABLE 11

Mean Intelligence Scores according to Fathers Occupation

	Boys					Girls				
	Un- skilled (55)	Skilled labour (19)	Business (27)	Farming (108)	Service (22)	Un- skilled (41)	Skilled labour (19)	Business (27)	Farming (96)	Service (20)
Verbal Quotient (VQ)	77.1*	78.3*	86.3*	80.9*	85.0*	72.0*	74.4*	83.4*	77.0*	80.1*
Perfor- mance Quotient (PQ)	77.1*	6.7*	7.1*	7.3*	8.6*	5.8*	6.5*	11.3*	6.9*	9.3*
Intell- gence Quotient (IQ)	71.7*	76.1*	82.5*	75.7*	84.8*	66.9*	70.7*	77.1*	72.0*	73.3*
	12.0*	8.4*	10.0*	8.6*	13.8*	11.2*	8.5*	13.8*	10.1*	13.1*
	74.4*	77.2*	84.5*	78.3*	85.0*	69.2*	72.6*	80.4*	74.7*	76.7*
	8.7*	6.8*	7.7*	7.1*	10.8*	8.0*	6.9*	12.2*	7.9*	10.8*

Duncan's Multiple range test

Occupation	VQ		PQ		IQ	
	Boys	Girls	Boys	Girls	Boys	Girls
Unskilled Vs skilled	*				*	
Unskilled Vs Business	*		*	*	*	*
Unskilled Vs Farming		*	*	*		*
Unskilled Vs Services	*	*	*		*	*
Skilled Vs Business	*	*	*		*	*
Skilled Vs Farming						
Skilled Vs Service	*	*	*		*	
Business Vs Farming	*	*	*	*	*	*
Business Vs Service						
Farming Vs Service	*		*		*	

occupation significantly affected the girls adjustment in social and family areas. Daughters of those fathers who were skilled labourers had good family adjustment whereas healthy social contacts were observed in

daughters of fathers who were in service and farming. Anxiety was parafound only in labour class.

Mother's occupation influenced the children's intelligence (Table 12), whereas the

TABLE 12

Mean Intelligence Scores according to Mother's Occupation

	Boys		Girls	
	Service	House Wife	Service	House Wife
	(193)	(56)	(177)	(45)
Verbal Quotient (VQ)	79.8* 7.4	85.4* 8.7	75.2* 7.1	81.5* 10.3
Performance Quotient (PQ)	75.2* 10.4	81.8* 11.2	69.6* 10.5	76.6* 14.6
Intelligence Quotient (IQ)	77.5* 8.1	83.6* 9.3	72.5* 8.2	79.1* 12.2

Duncan's Multiple range test

Occupation	VQ		PQ		IQ	
	Boys	Girls	Boys	Girls	Boys	Girls
Service Vs House Wife	*	*	*	*	*	*

* $P < .05$

personality variables were not influenced. Children whose mothers were at home looking after household work, performed well on the intelligence test when compared to the working mother's children.

Conclusions

The current nutritional status of children influenced their intelligence to a greater extent.

the personality variable was not influenced to that extent. In other words, whatever the nutritional status of the child, his personal adjustment and his adjustment to his family was not affected. However the social adjustment was affected to a certain extent.

Similar to the earlier findings on current nutritional status, children who were malnourished previously also exhibited poor performance on the intelligence test. This shows that

the deficit was carried over. However, their adjustment was not affected.

Gender differences were found in both the personality and intelligence variables. Girls exhibited higher anxiety and maladjustment. Boys were high in intelligence and this may be due to the schooling, where more number of boys attended school.

The socio-economic status had a positive influence on the intelligence. In other words, children of educated parents were high in in-

telligence and better adjusted. Parents occupation also had a significant effect on the psychosocial variables. Children of mothers, who were at home managing the household work, were higher in intelligence. Children of fathers engaged in service and business were more intelligent and better adjusted.

The findings presented here are of a result of preliminary analyses. More sophisticated techniques will be used as soon the data collection is completed. The study is in progress.

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Identity of the Adolescent Girl: Rural-urban and Social Class Factors

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THIS PAPER is based on a study conducted to investigate the identity of the Indian adolescent girl. Identity was studied in relation to the girl's sex-role and status as a female.

Erik Erikson's (1968) theory of human development, that proposed a distinct stage of adolescence in the life cycle, has greatly influenced theorizing about adolescent development. In his Epigenetic Chart, the period of adolescence corresponds to the fifth developmental stage i.e., the stage of identity versus identity-diffusion. The critical challenge to the individual during this period is the achievement of an "inner identity". Failure to come to grips with his inner self is likely to lead to a state of identity confusion in the adolescent. Erikson further stipulates that before a stable sense of identity is achieved, the individual must go through and resolve successive psycho-social crisis.

In the Eriksonian model, the antecedents of the adolescent "identity crisis" are a series of physical, physiological and cognitive changes within the individual. The very rapidity of

changes increases the difficulty of achieving and maintaining a perception of the self as clearly defined and consistent. As a result of these disturbances there is a developmental crisis, the "identity crisis".

However, the term crisis has been used by Erikson in a developmental sense "to connote not a threat of catastrophe, but a turning point, a crucial period of increased vulnerability and heightened potential" (1968). It refers to a period of struggle or active questioning in choosing among meaningful alternatives.

The term identity has received special focus in Erikson's discussions about adolescence. According to him, "identity includes, but is more than, the sum of all the successive identifications of those earlier years when the child wanted to be, and often was forced to become like the people he depended on" (1968, p. 87). He states that, "an optimal sense of identity is experienced merely as a sense of psycho-social well-being. Its most obvious concomitants are a feeling of being at home in one's body, a sense of 'knowing where one is going', and an inner

assuredness of anticipated recognition from those who count" (p. 165). A person's identity can thus be taken to be one's sense of knowing where one stands in relation to others in the family and outside and one's feelings about acceptance of self.

The Concept of Adolescence

The concept of adolescence, as it is commonly understood in contemporary psychology, was first presented by G. Standley Hall in 1904. It is believed that the notion was, on the whole, an American discovery. Hall's contention was that it was a period of "storm and stress" and that physical growth was "saltatory" during this period. Margaret Mead (1939), the well-known anthropologist, challenged the concept of turmoil in adolescence on the basis of her observations of girls in Samoa, a South Pacific island. She found that except in physical features, there were no other great differences to set off the group passing through adolescence from the group which would become adolescent in two years or the group which had become adolescent two years before.

Erikson viewed adolescence as a "natural" period of uprootedness in human life. He stated that the adolescent boy or girl experiences a virtual revolution—physical, physiological and cognitive, within himself. The delicate balance achieved by the individual at the end of the latency period is disturbed because of the process of genital maturation.

A MASCULINE MODEL OF ADOLESCENCE

Despite popular acceptance, the Eriksonian model of identity formation has been criticized as being a masculine one (Gallatin, 1975; Gilligan, 1982). He did not feel the need to distinguish between the crisis of male and female adolescents. Since his discussion was with reference to the North American middle class,

we may assume that his view was culturally appropriate.

Gallatin (1975) has pointed out that the conflicts noted by Erikson in his theory have reference to the issues which men must work out in order to confront their adulthood—what vocational plans to formulate, what roles to play, what identity to assume etc.

Regarding a woman's identity, Erikson stated that "much of a young woman's identity is already defined in her kind of attractiveness and in the selective nature of her search for the man (or men) by whom she wishes to be sought" (1968, p. 283). In other words, he sees a woman's identity contingent upon the presence of men and their attitudes to her. One cannot but note that Erikson's ideas reflect American values of the fifties and sixties.

THE INDIAN FEMALE ADOLESCENT

In the present study, as stated in the beginning, identity was studied in relation to the girl's role and status as a female. There were two main reasons for such an emphasis in this study. One, cross-cultural observations do not substantiate the argument held in traditional theories of psychology, that individual autonomy is a necessary corollary of maturity. Studies on alternatives in psychological theorizing (Anandalakshmy, 1981; Marriotti, 1982; Ramanujam, 1981; Roland, 1982) have found that group coherence and conformity are highly valued in many cultures, including the Indian culture. When individual autonomy of excessive individualization is seen as a counterforce to group allegiance, it is discouraged. Thus an Indian girl's identity is deeply intertwined with the social roles assigned to her.

In traditional India, the individual is seen primarily as a member of a certain language and religious group, hailing from a particular community, *jati* and family. Actions and roles

are interpreted in the light of the family's circumstances and reputation. Individual initiative and decisions are acceptable as long as they do not disturb the family bonds and conformity to expected behaviour is commended. Deviation from the norm is generally subject to scorn or at least to disapproval.

Since the Indian girl is part of a culture in which being group-oriented is rewarded, her identity finds expression in non-individualistic forms. It is rooted in her femininity. As acceptance of the traditional sex-role is a cultural expectation, the attitude to and acceptance of the assigned role serve as fairly good indicators of identity.

The stress on group loyalty certainly undermines the significance of individual needs. However, this does not mean that individual differences are not recognized in the Indian world-view. The Hindu approach towards human experience derives from the belief in individual *Karma*, a concept which states that each soul carries a history of experience and action from earlier births. This predisposes an individual to certain specific actions. The notion may seem to reduce the emphasis on personal efficacy, but it respects the individual variations in maturation, endowments and abilities. "The child is perceived as an individual *atma* with his own *karma* to live out" (Anandalakshmy, 1981, p.7).

The second reason for the study of the girl in relation to her sex-role was an anticipated absence of a classical "psychosocial moratorium" among the rural and lower class adolescent girls. In the traditional Indian society, instead of a delay in adult role-commitment, there is an early and almost compulsory confirmation of adult roles. Moreover there are stringent rules and regulations regarding role behaviour in contrast to societal "permissiveness". Under these conditions, the "psychosocial moratorium" does not take place in the

Indian adolescent's life, except in the lives of those who are upper class and urban, studying in formal educational institutions. Physical and physiological changes of puberty are a reality to all adolescents. However, most Indian adolescents are not "adolescing" psychosocially. Future occupations are generally specified and choice of any kind within the system is limited. They do not encounter personal conflicts in choosing between meaningful alternative goals and the "uncertainty of the adult roles ahead"

Systematic research studies providing empirical data can often contribute to the understanding of social issues and problems. However, there is an inadequacy in research on female childhood and adolescence. While some studies on socialisation have provided a world view of girlhood in India (Anandalashmy, 1975; Madan, 1965; Minturn & Hitchcock, 1963; Ross, 1961; Saraswathi & Dutta, 1990), few have taken adolescent girls as the focus.

In his book *The Inner World* (1978) Kakar, a psychoanalyst, has presented an impressionistic view of Indian girlhood based on a combination of his clinical experience, and anthropological and mythological accounts. On feminine identity he maintains that in the Indian society a woman's "identity is wholly defined by her relationship to others". He speculates that although there is cultural devaluation of the girl in this strongly male-dominated society, the girl derives her identity from her relationships with the other female relatives within her own family.

A recent publication titled *Growing Up in Rural India: Problems and Needs of Adolescent Girls* (Kumari et al., 1990), has quite effectively brought into focus the status of the rural adolescent girl in India. On the basis of their analysis of data on 400 girls between 10 and 16 years, the authors found that the adolescent girls had a very low self-image. According to them,

"this was due to the fact that they were always made to believe that their bodies are impure after puberty and that girls are weak and inferior, and always are objects of attraction for males" (p.113).

Defining Traditionality

The term 'traditional', as it is used in this study, needs to be explained. While in common usage it has been contrasted to the term 'modern', in the present discussion the traditional person or society is not perceived as the antithesis of the modern. In fact, the two entities are visualised as complementary, rather than mutually exclusive. Shils (1971) defines tradition as beliefs with a particular consensus through time. A traditional person is one who follows the traditions of his society. Like culture and language, traditions also relate to a particular group of people. In contemporary writing, modernity appears to be a synonym of technological advancement. Considering the pace at which traditions have to change, it may appear that traditions tend to clash with modernity. It is, however, not tradition *per se* but the institutionalisation of tradition that comes into conflict with modernity. An exercise to change traditional values without a corresponding change in the structural aspects (occupational and educational systems) is likely to meet with failure.

Tradition imparts a cultural identity to a person. It guides him in his social life and in understanding his fellow-beings. Hence an individual who is traditional is likely to experience a greater sense of identity that a person who, by dint of rejection of his traditions, aspires to be 'modern'. Traditionality, by definition, encompasses a set of value-orientations that enable the individual to identify himself as one who subscribes to them. A sense of uprootedness which, according to Erikson (1968), is a sure sign of loss of identity, tends

to pervade in cases where there is a negation or obliviousness of the past and the future is not quite known.

RURAL-URBAN DWELLING AND SOCIAL CLASS

With regard to the influence of rural-urban residence of individuals, several studies of modernization have found urban living and urban experience to be significantly correlated with modernity (Inkeles and Smith, 1974; Portes, 1973; Schnaiberg, 1970(a), (b).) In these studies the urban man is frequently described as modern and the rural as traditional. Findings questioning the validity of this relationship have also been reported. It is not the urban experience *per se* which makes men more modern, but rather their differential contact with other institutions and change agents such as schools, mass media, and factories, which the cities contain.

Socio-economic status (SES) as a variable has been examined in relation to modernity by many researchers. Kahl (1968) and Portes (1973) were of the view that SES was the primary determinant of the emergence of modern attitudes. A link between higher SES (hence affluence) and modernity of attitudes has been reported. Unfortunately, the way modernity-traditionality are defined, poverty gets equated with traditionality and affluence with modernity. As a result a myth that persists is "traditional, therefore poor".

The Study: The objective in this study was to determine whether traditionality, rural-urban residence and socio-economic status had any influence on the sex-role identity of adolescent girls. It was hypothesized that girls, who are traditional in their orientation, irrespective of their place of dwelling and socio-economic status are more fully identified with their sex-roles and socially assigned statuses than those who are less traditional. It was further envisaged that factors interfering in the girl's iden-

tity crystallization are formal education and related vocational aspirations, choice in marriage and delayed marriage.

Subjects: One hundred and fifty girls in the age-range 16-19 years were interviewed. The subjects were drawn from lower and middle SES groups in rural areas and lower, middle and upper SES groups in urban areas. Equal number of girls (30) were selected from each of the five groups. The rural locations were in the northern states of Punjab and Uttar Pradesh. The urban sample was from New Delhi. Within a given SES level, age was the only criterion determining the selection of subjects. Thus, the subjects in the sample were both educated and illiterate, married and unmarried. Some of the married women had children.

DATA COLLECTION

The two major tools of data collection were a Traditionality Scale and an Interview Schedule.

Traditionality Scale: This scale was in the form of a questionnaire and was titled Attitudes on Issues of Social Significance, to commouflagé the original purpose of the questions. There

were 35 items in the questionnaire. The items were based on seven issues, namely, discrimination between sexes, male-female status in marriage, marriage customs, family loyalty vs. individualisation, caste attitudes, age-hierarchy, and fatalism vs. personal efficacy. There were five items in each area, and each item had a "traditional" statement and a "non-traditional" statement. An agreement with a "non-traditional" response was scored 0, with a "traditional" response 2, and "in-between" 1. The range of possible scores was 0 to 70. The cumulative score on all the items was the total Traditionality Score. A high score indicate a high level of "traditional" attitudes.

Interview Schedule: An interview-schedule consisting of 48 open-ended questions was developed. It dealt with four areas—(a) educational and vocational history and future aspirations; (b) socialization practices within the family, specially those dealing with differential treatment between boys and girls; (c) menarche, menstruation and related experiences; and (d) marriage. Most of the subjects were interviewed at their homes and, in general, two meetings per family were required to obtain complete information.

TABLE I

Mean Scores of Subjects on Traditionality, N=150

Group No.	SES Group	Female Status	Family Loyalty	Caste	Discrimination	Fatalism	Age Marriage hierarchy	Total mean score	
I.	Lower (rural)	6.13	5.73	5.80	5.10	6.97	6.57	8.87	45.16
II.	Middle (rural)	3.83	5.80	4.43	3.93	3.90	5.43	6.73	34.06
III.	Lower (urban)	3.63	4.53	3.00	2.87	3.53	5.00	6.63	29.20

TABLE 1 (Cont.)

Mean Scores of Subjects on Traditionality, N=150

IV.	Middle (urban)	2.30	2.73	1.33	0.83	2.30	2.13	3.57	15.20
V.	Upper (urban)	0.97	2.63	0.53	0.60	2.00	1.43	3.13	11.30
	Mean score	16.85	21.42	15.09	13.33	18.70	20.56	28.93	

TABLE 2

Mean Traditionality Scores of Lower, Middle and Upper SES subjects from Rural and Urban Areas

Group No.	SES Group	Mean	
I.	Lower (rural)	45.16	16.56*
II.	Middle (rural)	34.06	1.67**
III.	Lower (urban)	29.20	4.91*
IV.	Middle (urban)	15.20	2.15*
V.	Upper (urban)	11.30	

* $P < .05$ ** $P < > .01$

ANALYSIS OF DATA

The scores on the Traditionality Scale were analysed by two statistical techniques: (a) one-way Analysis of Variance and; (b) *t* test. The data from the interviews were descriptive and hence were analysed in detail for each group under seven main headings. These were Education, Socialization, Satisfaction with sex-role and circumstances, Housework, Code of conduct for girls, Menarche and Marriage. At the

end of the discussion of the results of each group, the profile of a girl from the group was drawn. In the concluding discussion the findings of all the groups were collated and their implications reviewed for the identity of adolescent girls.

Findings: The data on the Traditionality Scale, as seen in Figure 12.1, clearly showed that the rural girl, was significantly more traditional than the urban girl. The rural lower SES girls scored the highest on 'traditionality' while the

urban upper SES girls were the lowest on this variable. The rural middle, urban-lower and urban-middle SES girls were in between the two extreme levels in that order.

A break up of the mean scores of the subjects in the seven areas comprising the scale gives a picture of the relative contribution of scores through each area. Table 1 shows the mean scores of the subjects in each of the seven areas. The analysis of variance revealed a significant difference between the five groups on traditionality, $F(4,145)=65.45$, $p<.01$.

These results indicate that within a given demographic set up (whether rural or urban) socio-economic status is negatively related with the level of traditionality. It also becomes evident that rural girls are significantly more traditional than urban girls irrespective of their SES.

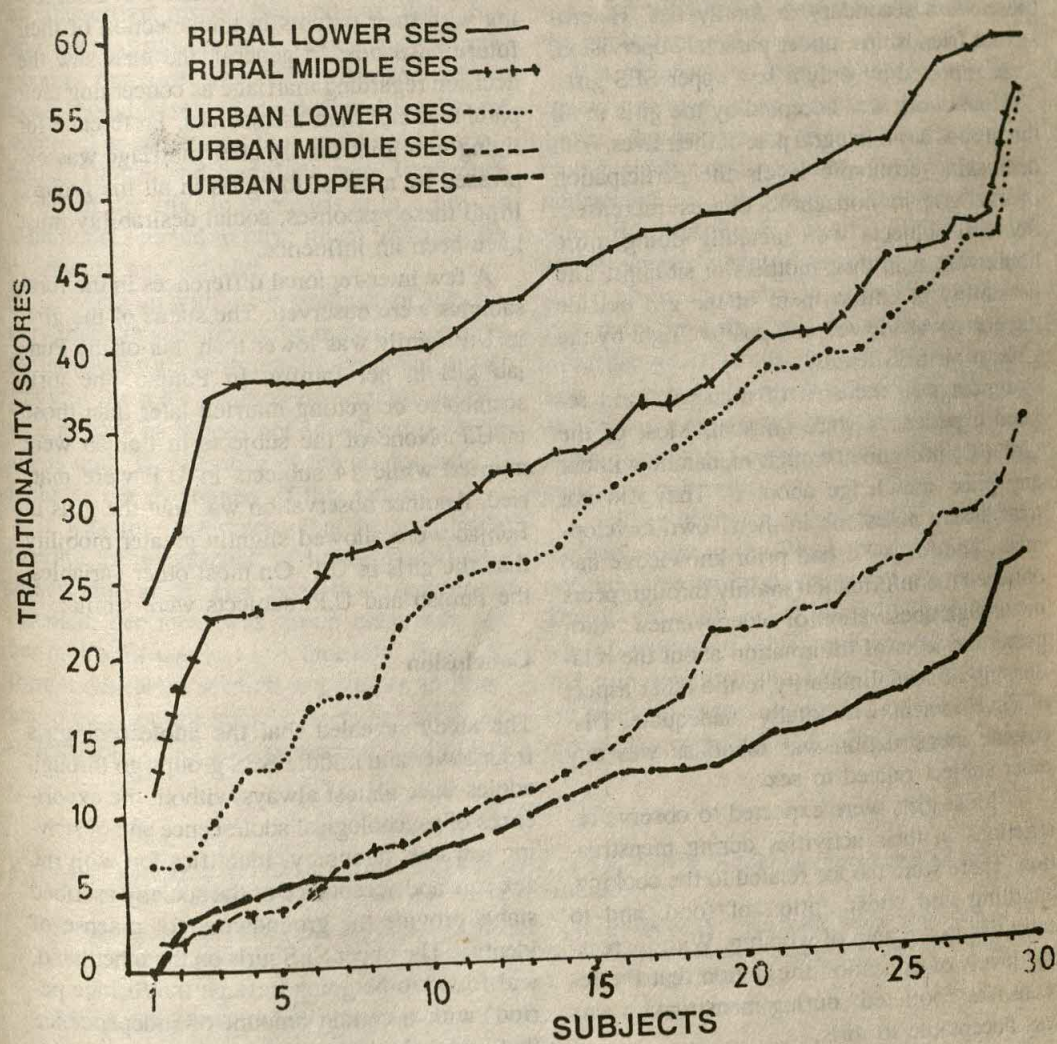
Table 2 shows that the differences between the mean scores of all the groups were significant, thus confirming the effect of SES and rural-urban background on the level of traditionality of the subjects. In other words, being rural and lower class was associated with a high level of traditionality while being urban and upper class connoted a low level of traditionality. Any relationship between traditionality and sex-role identification then presupposes the interaction of these two demographic factors in the process.

The relationship between traditionality and identification with the expected sex-role was curvilinear. The subjects in the lower SES Sample (the most "traditional") were found to be fairly well-adjusted in their socially defined roles, having accepted the role as destined rather than as desirable. The urban upper SES girls (the least "traditional") also revealed a satisfactory adaptation to the demands of the role expected of them, though the sex-role itself was constituted differently for them by their sub-culture.

The middle SES girls of both rural and urban groups (who were moderately "traditional") were found to have problems in the process of identification with their sex-roles. While the rural girl resented her female role due to the powerlessness and lack of mobility it meant for her, her urban counterpart experienced a distance from the culturally prescribed role in identifying the least with it, compared to girls in other groups.

Formal education emerged as the single factor that produced conditions favouring or dis-favouring identity crystalization, depending upon the specific conditions under which it prevailed. Level of education was related to the need for achievement, sense of power and control over personal life, attitude to discrimination between sexes, and degree of satisfaction with the sex-role. The more educated girls in the lower and middle SES groups tended to view their environment as restrictive and limiting. The upper SES girls, though highly educated, did not complain about their roles or environment in general, perhaps because they were permitted a moderate degree of autonomy. They had specific and individualised problems, not always related to the sex-role.

Discrimination between boys and girls in socialization was widely reported by girls in all the groups. Except the rural lower SES girls, all the other girls expressed resentment about the preference shown to boys, specifically envying them for their freedom of physical movement. While the lower and middle SES girls accepted the differential treatment of boys and girls in socialization as the norm of society and hence inevitable, the upper SES girls were less willing to concede, on principle, a superior status to boys. In all the groups, it appeared that the physical and social limitation of being a girl (act being able to do what a boy was allowed) was resented, rather than femaleness itself.



Scores of subjects on Traditionality Scale

Fig.12.1

Cultivating peer affiliations and friendships had a low value in most families. Only in urban middle and upper SES families friendships with peers were given some importance. However, these were secondary to family ties. Heterosexual friendships, under parental supervision, were reported by only a few upper SES girls.

Housework was accepted by the girls in all the groups as an integral part of their lives. With decreasing economic levels the participation of the girl in household chores increased. Several subjects were actually doing more housework than their mothers or siblings. The possibility of employment of the girl outside the home was viewed in a positive light by the girls at all SES levels.

Findings in the area of menarche and related experiences were unusual. Most of the girls (83) had gone through menarche without any prior knowledge about it. They did not treat it as a milestone in their own development. The few who had prior knowledge had obtained the information mainly through peers or through observation of older women. Altogether the level of information about the relationship of sexual maturity to the other aspect of development was totally inadequate. Discussing menstruation was taboo as was any other subject related to sex.

Most girls were expected to observe restrictions in their activities during menstruation. There were taboos related to the cooking, handling and consumption of food, and to activities in the area of worship. With increasing levels of education the notion that the female was "polluted" during menstruation was less acceptable to girls.

There was a positive relationship between the level of education and age at marriage as well as perceived control in marriage. A negative relationship emerged between the level of education and the degree of inhibition in talking of one's own marriage. There was almost

complete faith in the parent's discretion in finding a suitable match for their daughters. Except in a few middle and upper SES families the girls did not see the possibility of disagreeing with their parents in the selection of their future husbands. In general, the girls saw the decision regarding marriage as concerning their parents rather than themselves. Preference for living in a joint family after marriage was expressed by most of the girls in all the groups. In all these responses, social desirability must have been an influence.

A few inter-regional differences in the rural samples were observed. The status of the girls in U.P family was lower than that of the Punjab girl in her family. In Punjab, the girls seemed to be getting married later than those in U.P. None of the subjects in Punjab were married while 14 subjects in U.P were married. Another observation was that the girls in Punjab were allowed slightly greater mobility than the girls in U.P. On most other variables, the Punjab and U.P. subjects were similar.

Conclusion

The study revealed that the adolescent girls from lower and middle SES groups go through adolescence almost always without the experiences of psychological adolescence and of striving towards autonomy. Identification with the sex-role and acceptance of the socially ascribed status provide the groundwork for a sense of identity. The upper SES girls on the other hand, was found to be going through the 'bridge period' with a certain amount of independence that was only sporadically found among middle SES girls and almost missing among the lower SES girls. She had the time and the opportunity to make important decisions regarding her education and career that sometimes engulfed her in a dilemma. It was significant that despite situations where choices

lead to conflict and non-resolution of conflict leads to crises, the upper SES adolescent girl maintained a sense of identity.

The girl between 16 and 19 years emerged as unassertive, responsible and compliant. She had internalized parental values and expectations as her own. The constraints and restrictions, though resented at a personal level, were accepted as something that could not be negotiated. Taboos and traditions were very much a part of her life. In comparison to a boy an Indian girl seemed to have much less freedom of thought and activity.

Growing up with the acceptance of a secondary place in relation to the male is conducive for satisfactory adjustment to the social set up. Envy of the male position by females is tolerated as long as it does not actually disturb the status quo. The identity of the adolescent girl includes her awareness of this reality.

It was this awareness that helped her to tolerate the experience of being treated as a lesser individual. Her activities were group oriented, her ideal was group coherence and her motto for conduct was modesty. However, formal education seemed to give her an impetus to question the social system, specially the restrictions on her self-expression. In an other

way, formal education seemed to play a significant role. Even if a girl had a few years of schooling, she desired a "respectable" occupation such as that of a teacher or a clerk. Seeking a job outside the home was a new facet of the adolescent girl in India.

For an observer from another culture the Indian girl may be an object of pity. An observer who has grown up in the same culture would sympathise with her, but would also understand her acceptance of the socially defined role despite her status. In the Indian society some element of suffering is associated with just being a woman. There is value attached to her being able to endure pain and suffering—it is almost in-built in the female role. Of course, in mental health terms, such an attitude implies that half the society must make some sacrifice so that the whole social system is coherent.

When compared with Erikson's model of the adolescent in the West, the Indian girl did not face an identity crisis during adolescence. The development of her individual personality was encompassed within cultural expectations and role requirements. These helped to absorb her personal crises. She could find some fulfilment and recognition within the expected roles.

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A Study of the Adolescent View of the Changing Role of the Mother

CIMA M. YEOLE

ADOLESCENCE is thought of as that period of life during which maturity relates to the development of the procreative powers of the individual. The Indian adolescent is brought up with strong family ties. Obedience and respect for seniors has been a strong morally binding force. Do today's adolescents, who are growing up with the changing demands of the society, adhere to the traditional norms or do they think diversely and independently? Mookherjee (1977) found that a large number of adolescents desired to do away with those traditional ways which came in the way of being progressive and they also wanted to do away with dowry. Thakar (1975) found that the influence of western culture made adolescent's attitude more liberal and modern in their outlook. Nindru Lehal (1981) concludes that adolescent girls from joint families were conservative and more traditional in their sex role.

In Johnson's (1985) *Education on Trial*, Wynne found that American adolescents had a consistent disturbing, sharp upward swing in the

incidence of rates of rape, robbery, assault, arson, suicide and murder. Based on Wynne's finding, the author conducted a study in 1985. She was dismayed to find that the Indian adolescents were demonstrative in their behaviour with anti-social tendencies (Appendix A).

These conflicting observations infused the author to explore one of the many causative factors for the drastic change in adolescent's thinking and behaviour, i.e. the parental role—the role of the mother, the parent who is thought to be closer of the two parents to the child.

A number of questions came to mind about the mother's role, i.e. could there be a possible conflict between the adolescent's concept of the mother's role and the actual role played by the adolescents' mother? Is it possible to differentiate between the mother's traditional role and her developmental role? Which of the two roles do the adolescent girls of today desire in their mother? Resolving these questions would first demand the clarification of the nature of the traditional and developmental roles.

In ancient civilised cultures throughout the world, the role of each family member was rigidly prescribed by custom and devotedly followed by the members. Today each family member performs multiple roles as per the demands of the society. To an adolescent today, a parent is thought of more in terms of activities, personal characteristics and relationship with the child than in terms of physical appearance or personality make up. These include traits which may be liked or disliked by the adolescents. These concepts may fall into one of the two categories—traditional or developmental.

The Traditional Concept of the Mother : It emphasizes an authoritarian role—instilling in the child's mind socially approved moral and religious values. Hurlock (1955) has elaborated the traditional concepts of a 'good mother' as follows—taking physical care of the child, guiding and understanding the adolescent, keeping the house, teaching religious and moral values and setting a good example.

The Developmental Concept of the Mother : It emphasizes respect for the person, satisfaction in personal interaction, pride in growth and development, a permissive growth—promoting type of guidance and having interests outside the house.

Having differentiated between the traditional and developmental concepts of the role of the mother, an opportunity to carry out the study on the adolescents' view of the changing role of the mother came to the author by way of an invitation from a local high school to address the adolescent girls on the role of the mother in today's society.

Methodology

Subjects : Out of a population of 300 adolescents studying in class X in English medium schools of Kolhapur city, a sample of 61 ado-

lescent girls were selected which represented 20% of the population, all belonging to high SES group.

Procedure : Prior permission was obtained from the authorities of the institution to carry out the study. Before imparting any information to the adolescent girls on the role of the mother in today's society, their unbiased views on the changing role of the mother were collected with the aid of Questionnaire (CRM) on the 10th of August 1990. The adolescents did not have any problem in filling out Questionnaire (CRM). The nature of the study involved the respondents' expression of views on the changing role of the mother—therefore a combination of closed form and open-form questions were used to collect the information in the form of the Questionnaire (CRM). The Questionnaire (CRM) consisted of seven questions. Four questions had sub-sections in them to gather indepth information.

The CRM was framed to elicit adolescents' views on the following :—

- (i) The difference, if any, between motherhood and the state of being a mother.
- (ii) Mother as an epitome of sacrifice as one made to serve!
- (iii) Mother having her own identity.
- (iv) The ever lasting effect of mother's teachings on the child.
- (v) Mother as a friend.
- (vi) Place of the mother in today's society.
- (vii) The changing role of the mother in today's society.

The test-retest reliability was found to be 0.79. The total score on the CRM was compiled as the test score for each of the 61 adolescents. Exactly four weeks later the same CRM was administered to ten adolescents from the same sample—this was the score on the retest.

The test-retest procedure indicated positive correlation indicating that the CRM is a reli-

able tool. The content validity of the CRM was established from the examination of the tool by competent judges (Ebel, 1966). Three educationists established that the items, statements and scoring procedure of the CRM was valid. The collected data was analysed in view of the stated traditional and developmental role of the mother.

Results

The unrestricted form of questions in the CRM resulted in varied responses to each of the seven questions. A list of all responses by the 61 adolescents to each question were first listed, the total frequency for each response was noted and the percentages calculated. The response with the higher percentage indicated the prevailing views of the adolescent girls.

The data on the views of the adolescents on the various aspects of the changing role of the mother have been presented as follows:

(i) *On motherhood and state of being a mother:* All the subjects were of the view that motherhood was different from the state of being a mother. The two roles have been differentiated as follows :

75 per cent adolescents viewed motherhood as meaning the qualities of love, sympathy, affection, security, protection, kindness and patience which are born in being a mother. 25 per cent state motherhood as 'being a mother' and 25 per cent viewed motherhood to mean "sacrifice". 8 per cent felt motherhood is "being selfless and devoted" whereas 6 per cent viewed it as a 'sense of responsibility'—the remaining two responses are negligible.

79 per cent adolescent girls viewed mother as a state of being a female parent. 49 per cent felt that mother was a state of giving birth to a child. 25 per cent viewed mother as a female who reproduces. 6 per cent say she was the source of origin. The other two responses were negligible,

(ii) *On mother as an epitome of sacrifice or as one made to serve:* 97 per cent adolescents have responded by saying that the mother was the epitome of sacrifice. She sacrifices her time and energy for her children and the family. Only 3 per cent adolescents think that she need not sacrifice as she has been doing.

95 per cent adolescents have responded by saying that a mother is not "made to serve" but serving the family is her traditional role. Only 5 per cent girls felt that a mother was made to serve.

(iii) *On mother having her own identity:* It was found that all 61 adolescents, i.e., 100 per cent strongly felt that a mother can have her own identity. Elaborating the adolescent's responses, 69 per cent girls felt that by serving her family and looking after the house and the children the mother can have her identity. 49 per cent said that she can have her identity by taking up a job. 13 per cent indicated being sociable whereas 3 per cent felt that by using her talent and making her personality outstanding, the mother can have her identity.

(iv) *On the everlasting effect of mother's teachings on the child :* 100 per cent adolescents agreed with the statement that the mother's teachings have a lasting effect on the child's personality—her teachings include kindness, sharing, truthfulness, helping the poor, respecting the elders and the sick, patience, not stealing, not using slang language or answering back.

(v) *On mother as friend :* All the 61 adolescents i.e. 100 per cent voiced the opinion that the mother can be treated as a friend.

It was also found that 41 per cent girls felt that a mother can be a friend by being appreciative and critical. With her they can share ideas, secrets, joy, sorrow and difficulties. 13 per cent felt that the mother was a friend because she developed their personality. 8 per cent felt that the mother has experienced life

and can give proper advice about those matters in which the adolescent girls were confused. A small per cent felt she solved problems and thought right from wrong.

(vi) *On the place of the mother in today's society:* According to all the 61 adolescents, mothers today do find a better place in the society. It was found that 97 per cent adolescents felt that the government has given women status in the society by doing away with evil practices like dowry, child marriage, sati, etc. legally, 95 per cent adolescents felt that the mother today being educated can work, make her own decisions, is broad minded and can educate her children. 25 percent credited her with not being superstitious, whereas 23 per cent felt that she can fight for her rights. 16 percent adolescents responded by saying that she can freely communicate with the society, she can support her family and all job opportunities are open to her today. Few in number regarded a better place in the society to mother today because she enjoys greater freedom of speech and her remarriage is no more looked down upon.

(vii) *On the role of the mother in today's society:* The adolescent girls viewed 20 different aspects of the role mothers play in today's society. 53 per cent girls thought she should be educated and be social with her own identity in the society. 30 per cent felt she should hand down traditional and moral values. 26 per cent indicated that she should be qualified to work. 23 per cent regarded her as a friend to the children and that she should have a sense of responsibility, she should be modern, progressive, with a broad outlook. The remaining 13 aspects have been responded to by fewer number of adolescents.

Discussion

The mother is a female parent, whereas motherhood implies the qualities of love, sym-

pathy, affection, security, protection, kindness and patience, which are born in being a mother. The adolescents have assigned a traditional role for today's mother in serving and sacrificing for the family's well-being. They have not shown awareness that each family member should share and shoulder part of the family's responsibilities.

Adolescents feel that the mother's teachings, irrespective of whether they are traditional or developmental, good or bad, have a lasting effect on the child's personality. Sharma (1978) found that mother's influence on the development of prejudice in adolescents, was more than that of father. It is therefore important for mothers to realise how much they influence the child's personality.

The adolescent girls prefer that the mother's relation to the child should not be the traditional authoritarian one, but a friendly one indicating a developmental role, where the mother is appreciative and critical sharing ideas, secrets, joy and sorrow. This view is supported by Shah (1976) who found adolescents of low authoritarian mothers to be more mature, emotionally accepting, trustful, warm, cultured and independent minded than those of high authoritarian mothers. Sarkar (1980) recorded that children had more favourable attitudes towards their mothers than towards their fathers. Though, Singh (1976) showed that overdependence on mother lead to emotional maladjustment.

Adolescent girls have indicated that mothers find a better place in society today because they are educated, they can work, take decisions and are broad-minded. Sharma (1981) supports that working mothers maintained a positive and balanced relationship with her children as compared to the non-working mothers.

Mookherjee (1977) found that adolescent girls wanted to be educated, economically independent and get equal status with men in

jobs and at home. Government's efforts to do away with evil social practices perpetuated against women have elevated their status. This is purely a developmental role where mothers are finding a place for themselves even outside the home and finding an identity for themselves in the society.

As educationalist we, in the school with the parents' cooperation, must provide adolescent girls opportunities and experiences through the

curricular and extra curricular activities, within and outside the school, so that in future they are able to fit into the best 'mothers' role' as expected by the society.

The present study is limited to the English medium, class X adolescent girls population. It may be replicated on a larger population at different levels. Further analysis of the developmental role may contribute to pinpointing school and extra school activities which would foster its development.

APPENDIX A

Behaviour Problems in Adolescents

AMERICAN ADOLESCENTS IN 1982 (Study by Wynne E.A.)	INDIAN ADOLESCENTS IN 1985 (Previous Study by Researcher)
<ol style="list-style-type: none"> 1. Rape 2. Robbery 3. Assault 4. Burglary 5. Arson 6. Bombings 7. Murder 8. Suicide 9. Absenteeism 10. Vandalism 11. Extortion 12. Drug abuse 13. Alcohol abuse 14. Gang warfare 15. Pregnancy 16. Abortion 17. Venereal diseases 	<ol style="list-style-type: none"> 1. Smoking 2. Absenteeism 3. Eve teasing 4. Cheating in examination 5. Gang warfare 6. Assault 7. Stealing 8. Reading Sexy Literature 9. Jealousy 10. Gundaism 11. Loss of Concentration in Class 12. Abusing 13. Overconsciousness of opposite sex 14. Extroversion 15. Gossiping 16. Alcohol abuse 17. Drug abuse

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Perceived Parental Marital Violence : Implications for Hostility and Sex-role Orientation among Late Adolescents

V. KALPANA RAO AND GEORGE KURIAN

VIOLENCE in marriage in recent times, more than ever before, has become a disturbing Indian social reality (Ghadially & Kumar, 1988; Kishwar, 1989; Prasad, 1989). Though reliable statistics are not available with regard to the incidence of marital violence per se, its prevalence is not infrequent as one can infer from the alarming rate at which 'dowry deaths' are taking place in our society.

There is growing awareness that the family, as a major socializing institution, provides a strong context for the learning of aggressive behaviour in interpersonal relationships (Curtis, 1974; Enlander, 1974; Straus, Gelles & Steinmetz, 1980). The witnessing of physical abuse between family members who are supposed to love each other communicates to the children the acceptability and appropriateness of physical aggression in their own adult intimate interactions. The impact of parental marital violence on the behaviour of the witnessing children and adolescents has received scant attention in the Indian psychological research. This

comes as no surprise when we note the fact that only recently has violence in the family been publically recognized and professionally admitted as a phenomenon that deserves serious empirical investigation.

Western literature, however, provides accumulated evidence to suggest that perceived parental marital violence holds serious implications for the future behavior and emotional health of the children. For instance, Rosenbaum and O'Leary (1981) demonstrated that husbands who abuse their wives are significantly more likely to have witnessed parental violence during their childhood. Hotaling and Sugarman (1986), in a more recent study, evaluating 97 potential riskmarkers in marital violence on the basis of 52 case comparison studies, revealed that the most consistent riskmarker in husband to wife violence is the witnessed violence between parents during their growing up years, both for men and women. Straus et al (1980) and Steinmetz (1977) also report intergenerational pattern in marital vio-

lence. There are studies which report sex differences in this context. For example, Gelles (1976) and Walker (1985) argue that physical aggression in the family of origin increases the likelihood of men becoming the abusers and women the victimized. Pagelow (1981) however reports that exposure to father abusing the mother is related to men's subsequent abusing of their wives, but not the victimization of women as wives.

These findings give scope to propose that exposure to parental violence may predispose the children, especially the male child, to repeat the pattern of abuse in his own intimate adult interactions. The intergenerational transmission of violence hypothesis (Herzberger, 1983; Pagelow, 1980) based on the social learning theory (Bandura, 1973; Bandura & Waters, 1963); and Walkers (1978), extension of learned helplessness construct of Seligman, (1975) have come to be recognized as effective models in understanding the causes and consequences of violence within the family.

One of the most pertinent behavioral aspects in the context of perceived parental violence is aggression. Frequently this behavioral correlate has been studied in younger children, ages ranging from 5-7 years (e.g. Davidson, 1978; Levine, 1975). Not many studies have been reported with adolescent and young adult samples (Frosstrom-Cohen & Robenbaum, 1985). Understanding the impact of parental violence on hostility among late adolescents or young adults assumes significance for two reasons: (a) hostility or aggression, which can be conceived as a more or less stable emotional state marked by enmity towards others and a desire to harm and inflict pain upon those at whom it is directed (Baron, 1977; Berkowitz, 1964 largely determines the individual's tendency to initiate either aggressive or non-aggressive marital interaction pattern; and (b) intimate relationships during adulthood are ma-

jorly influenced by the behavioural patterns that persist during the preparatory stage of late adolescence.

Despite convincing evidence that boys and girls react differently to violence between parents (Emery & O' Leary, 1982; Frosstrom-Cohen & Rosenbaum, 1985; Porter & O' Leary, 1980, Rutter, 1970,) very few studies have focused on this issue. Girls and boys are socialized differently from one another into gender-appropriate behavior (Russo, 1984; MacCoby & Jacklin, 1974). Society accepts aggression and hostility on the part of the males. Girls who are given the idea that expression of aggression is inappropriate role behavior and are incapable of resisting hostility are likely to develop the attitude that they have little choice but endure male violence.

Conceiving hostility in relation to individual's sex-role orientation, in the context of perceived parental violence; is a compelling one. In recent times, the debate on sex differences has highlighted the importance of gender role orientation in understanding the behavioural pattern of both males and females (eg. Bem, 1975; Larsen & Seidman, 1986; Signorella and Jamison, 1986). The trait conception of sex role orientation holds that individuals have a tendency to encode and organize the concept about the self and endorse behaviour in terms of cultural stereotyped conception of maleness and femaleness. They are basically known as either masculine sex-role oriented or feminine sex-role oriented or simple sex-typed individuals. In contrast to this, there are persons who are androgynous in their sex-orientation. The androgynous persons are said to be sensitive to situational demands, adopting behavior that seems most effective, regardless of its stereotype as appropriate for one sex or the other, (Bem, 1975).

There is the line of argument which suggests that females who show a traditional femi-

nine sex-role orientation are victimized more in marital relationships. There is however no clear demonstration of this hypothesis. While Coleman, Wienman, and Hsi (1980), Semmelman (1982), Teloh and Lindquist (1984) report a positive relationship; Gellen, Hoffman, Jones & Jones (1984), Lopez (1984), Rosenbaum and O' Leary (1981) found no relationship. One major limitation of such studies, as pointed out by Rosenbaum (1988), has been the lack of appropriate comparison groups, which makes it difficult to demonstrate the influence of alternate sex role-orientations on behavioral correlates of marital interaction patterns. There is lack of empirical attention towards the increasingly important question of how aggression is expressed or inhibited in relation to gender role-orientation of the individual.

The present exercise is an exploratory attempt in this direction. It aims to study the effects of perceived parental marital violence on late adolescents in relation to their sex-role orientation and hostility. In face of dearth of empirical demonstration of the nature of relationship between these factors, this investigation does not propose to fit in the argument into any theoretical framework, or test any theoretical position, but hopes to contribute to data base on which testable models can be constructed.

The major hypotheses of the present investigation are :

The sex role orientation of the subjects may significantly be associated with perceived parental marital violence.

The level of hostility of the respondents may differ significantly as a function of perceived parental marital violence

There may be no significant sex differences between boys and girls with regard to hostility as a function of perceived parental marital violence.

Methodology

Design and Statistical Analysis

A2 (Perceived parental marital violence (PPMV): present, absent x 2 (sex: male, female) factorial design was used to analyse the effect of perceived parental marital violence and sex on the hostility scores of the subjects. Further, bisectional correlation was also computed between perceived violence and hostility scores to delineate the relationship between these two variables. A X^2 (Chi square) analysis was attempted to probe the association between perceived violence and the sex-roles of the subjects.

Subjects : One hundred and eleven randomly chosen college students constituted the initial sample, with 47 boys and 64 girls. Rate of return of questionnaires was 89.19 per cent. 11.11 per cent of the data was unusable. The final sample included 50 females and 37 males with a mean age of 17.2 years, having a minimum of 10 years of education and presently studying either degree or pre-degree courses in various colleges affiliated to Andhra University, Visakhapatnam.

A study of the socio-demographic details of the sample revealed that majority of the subjects, with the exception of 5 subjects, were Hindus by religion distributed across various castes. Seventy three percent were from the upper castes, 26.1 per cent from the Backward Castes, and 2 subjects belonged to Scheduled Castes. The mean parental income reported was Rs. 4, 245.21 per month. Fiftythree per cent of the fathers had professional education, compared to 13.15 per cent of mothers with similar educational background, 30.12 per cent of the fathers and 30.25 per cent of the mothers were graduates, 16.88 per cent of the fathers and 56.73 per cent of the mothers had secondary or elementary education. Majority of the mothers (81.61 per cent) were non-working, only 18.39

per cent of them were employed. The mean number of children in the family was found to be 3.26, and the birth order of the participants in the study averaged around 2.4, with an SD of 1.56.

Measures : The subjects' sociodemographic details were gathered by means of a personal data sheet which contained inquiries with regard to age, sex, educational background, parental education, occupation and income, ordinal position of the subject and number of children in the family.

Currently, there is no standardized measure available to quantify parental marital violence. To assess this independent variable in the present study, we adopted in a slightly modified form, the technique employed by Frosstrom Cohen and Rosenbaum (1985) to differentiate the subjects who witnessed parental violence from those who did not. Here the respondents are asked to report on a 4-point (ranging from often to never) Likert type scale, how often their parents yelled and screamed at each other, threatened each other, were tense and angry with each other, were unhappy in the relationship. In addition to this, a question on how often their parents push and shove each other was also asked. It was decided to include those who report to have witnessed, (a) pushing and shoving "often" or "sometimes" in the perceived parental Marital Violence (PPMV) "Perceived Violence" (PPMV-PV) group; (b) "often" or "sometimes" on any two of the four Likert type items, in the "Perceived Discord but No-Violence" (PPMV-PD) group; and (c) "never" or "rarely" on any of the items, in the "Perceived No Discord, No violence" (PPMV-Absent) group.

The response pattern of the participants in the present study, however, did not permit any of the subjects to be placed in the PPMV-PV group. This might primarily be due to the social desirability factor. Parental interaction is highly idealized in our society as one representing

cordiality and sanctity. This might have inhibited the subjects to report any sort of violent interaction between the parents. In view of this possibility, the criterion for differentiating PPMV-PV and PPMV-PD groups was collapsed, and all those who have reported to have witnessed "often" or "sometimes" at least two of the four Likert items were placed in the "Perceived Parental Marital Violence-Present (PPMV-Present) group. Following this criteria 71 subjects (40 females and 31 males) were placed in the PPMV-Absent group, in contrast to 16 subjects (5 males and 11 females) in the PPMV-Present Category.

The dependent variable, hostility, was assessed by using Buss and Durkee Scale of Hostility (1957). This scale measures seven different kinds of hostility, along with guilt factor. It consists of 75 items with "true" and "false" response categories. All items answered true are given a score of 1; with the exception of 15 reversed items which are scored for false responses. Hostility score is the sum of scored responses. High score indicates higher levels of hostility and low score, low hostility.

Notwithstanding some of the criticisms levelled against it, this scale has proved to be one of the most widely used paper-pencil test currently available to measure aggression (Edmunds & Kendrick 1980; Frosstromcohen & Rosenbaum, 1985). Since the major focus of the present study is on the level of aggression and not types of hostility the total score of this multifactor scale was alone considered.

Sex role orientation of the subjects was measured through Bem Sex Role Inventory (BSRI; Bem, 1974). BSRI is a two dimensional measure of masculinity (M) and femininity (F). It consists of three 20 item scales, or a total of 60 items, which are personality characteristics generally conceived as desirable for men (M items), desirable for women (F items), or desirable for both men and women (neutral items).

Subjects are asked to indicate on a 7 point scale (ranging from never true to almost always true) the degree to which each characteristic is "true of them"—BSRI gives three major scores, (a) M score—the mean self ratings for all M items ; (b) F score- the mean self-ratings for all F items ; (c) Androgyny (A) Score—the T ratio for the differences between M and F scores. Smaller A score (zero or less than or equal to 1), means the person is androgynous. A high positive score indicates feminine sex-role orientation, and high negative score, masculine sex-role orientation. BSRI effectively distinguishes masculine or feminine (the sex-typed) from the androgynous (the non-sex typed) individuals (Larsen & Seidman, 1986). The two dimensions of the BSRI scale are reported to show no logical or empirical correlation (average $r=-.03$). The androgyny score is found to

be internally consistent (average $=80.$), and uncorrelated with the tendency to describe oneself in a socially desirable direction (average $r=-.06$: Bem, 1975).

Procedure: A set of self-report measures containing, (a) personal data sheet; (b) Buss-Durkee Inventory of hostility (Buss & Durkee, 1957); (c) a scale assessing perceived parental marital violence; and (d) Bem Sex-Role Inventory (BSRI: Bem, 1974) were administered either individually or in small groups. Each testing session lasted for about 40-45 minutes. The data was collected over a period of one month.

Results

The means and standard deviations of the variables measured are reported in Table-1

The analysis of variance shows that there is

TABLE 1

Mean and standard deviation on Various Measures

Measures	Present		P P M V ABSENT	
	Males N=5	Females N=11	Males N=31	Females N=40
Hostility	$\bar{x}=47.6$ SD=17.81	$\bar{x}=38.09$ S.D=7.68	$\bar{x}=35.74$ S.D=9.23	$\bar{x}=36.95$ S.D=8.99
B.S.R.R Maculinity	$\bar{x}=4.43$ S.D=0.87	$\bar{x}=4.24$ S.D=0.81	$\bar{x}=4.57$ S.D=0.73	$\bar{x}=4.5$ S.D=0.87
Feminity	$\bar{x}=4.38$ S.D.=0.52	$\bar{x}=4.61$ S.D=0.95	$\bar{x}=4.75$ S.D=0.62	$\bar{x}=5.13$ S.D=0.47
Androgyny	$\bar{x}=0.11$ SD=1.04	$\bar{x}=0.95$ S.D.=1.63	$\bar{x}=0.40$ S.D=1.77	$\bar{x}=0.47$ S.D=2.16

a significant effect of perceived parental marital violence on the hostility of the subjects ($F(1,83) = 5.37, P < .05$).

The effect of sex, however was not significant. The interaction effect was also not significant.

The Chi-square analysis performed for the male sample yielded a significant result $X^2 = 9.64, P < .01$. This indicates that the sex-role orientation of the males who witness parental violence differs from those who do not witness such violence. The cell frequencies further indicate that males who perceived parental violence were more masculine and androgynous compared to those reported no such violence.

Biserial correlation computed between hostility scores and perceived parental violence yielded different results for males and females. For males the correlation was .57, significant at .05 level, but for females the r was found not be significant ($r = .07$).

Discussion and Conclusion

The analyses reported above lend support to the thesis that exposure to parental violence effects the witnessing offspring. The results demonstrate that irrespective of the sex, individuals who witness parental violence, in general, are more hostile than those who do not.

This observation highlights the significance of long term effects of violence in the family. The argument for intergenerational transmission of violence, based on the social learning theory, is a strong one in this context. Violence is viewed as one that is learned through interactional styles in the family rather than it being an innate personality predisposition. Bandura's model (1973) is often extended to hypothesize that abusive interactional patterns observed amongst family elders as children, get reproduced in intimate adult relationships (eg., Bandura, 1973; Bandura & Walters, 1963;

Herzberger, 1983; Pagelow, 1980). Empirical evidence also suggests that wife abusers are more likely to have witnessed parental violence in their families and repeat the same pattern in their own marital relationships (eg., Carroll, 1977; Fagan, Stewart & Hansen, 1983; Gelles, 1974; Hotaling & Sugarman, 1986; Robenbaum & O' Leary, 1981; Rouse, 1984).

The relational analyses of the present study reveals a significant relationship between perceived parental violence and hostility among males but not females. The existing literature, in the case of the girls, does not provide any clear picture of the nature of relationship. Studies on battered women, however, show that the families of origin of these women are often marked by violent parental interaction (eg. Coleman, Weiman & Hsi, 1980; Frieze, Knoble, Zomnir & Washburn, 1980; Walker, 1981, 1984, 1985). According to the social learning theorists girls witnessing their mothers being battered come to passively accept victimization in their adult life.

In the present context, lack of association between perceived parental violence and hostility among girls suggests that witnessing of parental violence does not make them aggressive. Alternatively, whether girls become more susceptible to victimization, as is often argued, cannot be said with any degree of certainty, since this aspect is not within the scope of the present analysis.

However, in view of the much emphasis laid in the marital violence literature on the relationship between violence in the family of origin and one's own marriage, the significant relationship observed between perceived parental violence and hostility among males in the present study, possibly holds serious implications for their future intimate interactions.

The present analysis thus show a mixed picture : There is an associative linkage between hostility and perceived parental violence

among males but not females; at the same time no sex differences are observed with regard to hostility as a function of witnessed parental violence. Further light on this aspect could have been thrown if sex role orientation as an influencing factor was also incorporated in the analysis as was planned. However, due to insufficient N in one of the cells, this could not be attempted.

Alternatively, the Chi-square analysis attempted to investigate the relationship between sex-role orientation and perceived parental violence demonstrated that there is a significant association between the sex-role orienta-

tion and witnessed parental violence among males. Males who report parental violence tend to be more androgynous and masculine in contrast to those males who report no parental violence. The latter tend to be more feminine sex typed.

Though nothing conclusive can be stated with regard to the gender role orientation in the mediation of hostility in the presence of violent parental interaction, this exploratory study does point out the possible effects of perceived parental marital violence on hostility and sex role orientation among late adolescents.

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Loneliness among Adolescents in Relation to Personality and Cognitive Measures

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THE PHENOMENON of loneliness is difficult to define, yet it is one of the most important dimensions of human behaviour (Gordon, 1976; Graham, 1969). To date, the experts have not agreed upon a definition. Further, there are neither defined theoretical frameworks which explain loneliness nor is there any consensus regarding its consequences. There is, however, a general consensus among researchers about the inevitability of loneliness (Medora & Woodward, 1986).

Loneliness is something that we all have to deal with, at one time or another in our lives. The person who says, "I am never lonely" either does not understand the meaning of the word or is fooling himself (Tanner, 1973). Similarly, Mijuskovic (1985) has maintained that "all men are activated, by a fear of aloneness- loneliness and that consequently, every human thought, passion, and action derives from this one original, ubiquitous source, or fount, of frightened psychic energy. Yalom (1980) contends that "the process of deepest inquiry leads us to recognize that we are finite, that we

must die, that we are free, and that the individual is inexorably alone." Thus, according to Yalom, loneliness is one of the four primary concerns of existential man.

Generally the term "loneliness" tends to evoke thoughts of an elderly person isolated and alone or someone who is cut off from the mainstream of society. However, the experience of loneliness transcends the whole spectrum of human life and is felt by both young and old. Constant reminders of the pervasiveness of loneliness are expressed through popular songs, advice to the lovelorn columns, and news media coverage of everyday social issues (Williams, 1983).

Loneliness affects all persons and it knows no boundaries. It is felt by young and the old, married and the single, rich and the poor, educated and the illiterate, healthy and the unhealthy, the famous and the unknown, and extroverts and introverts (Medora & Woodward, 1986). Even those individuals who have wonderful relationships, devoted and loving families, excellent and involved careers and hectic

social lives, would at one time or another have to battle with loneliness which seems to be the most devastating malady of the age. It is a human condition with which we all have to cope at one time or another. It is no wonder that theoreticians of loneliness, such as Clark Moustakas, have stated that we are lonely from the cradle to the grave or, as he puts it, from the womb to the tomb.

From the above discussion it is apparent that loneliness is inevitable and will be felt by all individuals in varying degrees. Studies have revealed that loneliness is a meaningful psychological construct and is an aversive experience, similar to other negative affective states such as depression or anxiety. However, despite the fact that the drive to avoid loneliness constitutes the primary and irreducible motivational force in man it has not been studied extensively or thoroughly at adolescence. A review of the research literature yields reports of loneliness as a consequence or correlate of numerous variables. Research has identified a host of negative correlates of loneliness, including feelings of anxiety, depression and alienation (Schultz & Moore, 1988; Moore & Schultz, 1983; Russell, Peplau, & Cutrona, 1980; Weeks, Michela, Peplau, & Bragg, 1980; Horowitz & French, 1979; Russell, Peplau, Ferguson, 1978), alcoholism (Bell, 1956), physical illness (Lynch, 1976), suicide (Wenz, 1977), shyness (Wood & Hannell, 1977), feelings of powerlessness and external control (Jones, Freeman, & Goswick, 1981; Brennan & Auslander, 1979), social skills deficits (Jones, 1982), negative views of self and others (Jones, Freeman & Goswick, 1981), and inappropriate patterns of self-disclosure (Solano, Batten, & Parish, 1982; Chelune, Sultan & Williams, 1980).

However, the available research concerning the etiology of loneliness and the theoretical implications derived from this research can be criticized on a number of grounds. The meth-

odological problems in earlier research have been incorporated in the present study as potentially important refinements. Firstly, the different correlates of loneliness have received empirical support in studies which have computed correlations to understand correlates of loneliness. To understand the role of different factors associated with loneliness, the use of multivariate techniques is imperative keeping in view the overwhelmingly likelihood that loneliness at adolescence might be a multidetermined clinical phenomenon involving multiple, interacting and intercorrelated precipitating and predispositional factors. This perspective mostly neglected by earlier studies has been given due consideration in the present study by making use of factor analysis. Secondly, studies (e.g. Medora & Woodward, 1986a, b; Moore & Schultz, 1983), have failed to control the variable of sex in understanding the correlates of loneliness. The present study attempts to control this variable by including only males in its purview. Thirdly, very few studies have dealt with the phenomenon of loneliness among adolescents although a number of writers (Williams, 1983; Brennan, 1982; Gaev, 1976; Gordon, 1976, Waterman & Waterman, 1976, Tanner, 1973; Erikson, 1968; Konopka, 1966) have suggested that loneliness is especially felt as a painful experience during adolescence. Tim Brennan (1982) insists that adolescence is a particularly significant life stage for examining loneliness and the available evidence suggests that there is more loneliness among adolescents than among any other age group. Loneliness in adolescents was chosen as the focus of this study primarily because of the dearth of information regarding correlates of loneliness in this age group. Secondly, since adolescence has been theorized as being the first stage in human development in which loneliness is felt intensely (Tanner, 1973; Sullivan, 1953), persons in the helping professions, such as, psy-

chology, psychiatry, education, counselling and social work who have contact with the adolescent populations, need to examine the phenomenon of loneliness in adolescents more extensively to develop better strategies for coping with this phenomenon. This has been done in the present study. Fourthly, the concept of loneliness was dealt with in general as opposed to the evaluation of specific forms of loneliness i.e., no attempt was made to classify the types of loneliness (Weiss, 1973, 1974) the adolescents were experiencing nor was any attempt made to determine directionality, that is, whether loneliness was a cause or an effect. Fifthly, the findings with respect to the effects of anxiety, neuroticism and locus of control, are far from conclusive. These variables in addition to several important, though neglected variables, namely psychoticism, automatic thoughts, dysfunctional attitude, hopelessness and social desirability have been included in the purview of the study. Lastly, the variables of socio-economic status, marital status, employment status and urbanism were controlled. These methodological improvements lend significance to the present attempt which aim at investigating the extent of loneliness among adolescents, and the relationship of loneliness to certain variables.

It is hypothesized that loneliness is correlated positively with anxiety, psychoticism, external locus of control, hopelessness, negative automatic thoughts and dysfunctional attitude.

Methodology

Sample : The sample was limited to 200 male students attending XI and XII grades (10+2+3 system of education) in schools/colleges at Ambala. Moreover, it was limited to subjects who were single and belonged to urban area. The large majority of the subjects were from middle socio-economic status. Age ranged

from 16 to 20 years (\bar{x} 17.1, SD. =0.72).

Measures Used : Subjects in the study were asked to complete the 20 items from the Revised UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980) for measuring the extent of general loneliness. Higher scores were equated with high amounts of loneliness and lower scores with lower amounts of loneliness. In the Indian set up Kaur's (1990) investigation with college students found the instrument to be fairly reliable and valid for assessing feelings of being alone or isolated. Subjects were also asked to complete Anxiety Scale Questionnaire (Cattell & Scheir, 1963); Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975); Internal-external Scale (Rotter, 1966); and three cognitive assessment measures, namely Automatic Thoughts Questionnaire (Hollon & Kendall, 1980); Hopelessness Scale (Beck, et al. 1974); and Dysfunctional Attitude Scale (Weissman 1978). The psychometric requirements of these scales have been well documented in the Indian set up (Upmanyu & Reen 1990).

Procedure: The questionnaires were administered to the subjects in small groups comprising 10 to 15 subjects and in a uniform sequence involving five different sessions. The investigator explained the nature of the study and gave specific instructions regarding how the questionnaires were to be filled out. The instructions also assured respondents that their identity would not be revealed and emphasised that their participation would be appreciated. Data from the questionnaires were subjected to Principal-component factor analysis. Factors that produced eigen-values ≥ 1.00 were rotated into the final form using the orthogonality varimax rotation (Kaiser, 1958), and the resultant factor pattern was analysed for content. The primary criterion for the inclusion of a variable in a given factor was a loading of at least 0.30.

TABLE 1

Intercorrelation Matrix

S. Variables No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Alpha Coefficient	M	SD
1. Loneliness	-	.07	.12	.14	.10	.12	.09	-.20	.10	.07	-.31	.12	.14	.39	.89	40.1	6.9
2. Factor Q ₃		-	.42	.17	.62	.50	.06	-.07	.39	-.10	.07	.09	.06	.01	.64	4.4	2.1
3. Factor C _L			-	.08	.42	.48	.09	-.10	.26	-.10	.03	.02	.11	.07	.60	4.2	1.6
4. Factor C _L				-	.12	.10	.22	-.06	.20	-.04	-.10	.20	.18	.09	.50	4.0	1.5
5. Factor O					-	.60	.14	-.12	.32	-.14	.06	.12	.11	.10	.71	12.2	2.9
6. Factor Q ₄						-	.20	-.14	.49	-.11	.10	.14	.13	.09	.80	9.6	2.4
7. P-Scale							-	-.07	.26	-.10	-.21	.29	.24	.14	.70	5.8	1.7
8. E-Scale								-	-.12	-.19	.12	.04	.09	.07	.77	13.4	3.8
9. N-Scale									-	-.10	.01	.01	.12	.04	.81	10.9	4.4
10. L-Scale										-	.06	-.19	-.19	.07	.80	12.1	3.4
11. Internal-External											-	-.18	-.18	-.26	.86	9.7	2.1
12. ATQ												-	.36	.18	.91	54.3	15.6
13. DAS													-	.22	.88	174.4	22.2
14. Hopelessness														-	.90	6.0	2.4

Decimals Omitted, values of r significant at .05 and .01 levels are .138 and .181 respectively.

Results

Reliability Estimates : The authors submit that if different measures are to be of any utility for continuing research, they should be reliable. The psychometric properties of all the tests used are fairly well established. The reliability coefficients, however, have been computed to examine the reliability of the measures on the sample selected for the present study. Based on a random sampling of 100 subjects out of 200 subjects used in the present study, Cronbach's (1951) alpha for different measures were computed. As shown in Table 1, each of the 14 scales achieved reasonably high levels of internal consistency.

Intercorrelations : Pearson's product moment correlations were computed after it was ascer-

tained that the data fulfil the main requirements underlying the use of the method. The salient features of the intercorrelation matrix (Table-1) are : (i) the intercorrelations among different components of second-order anxiety factor range from .08 to .62. Seven out of ten coefficients of correlation have emerged to be significant. In addition, different components of second-order anxiety factor correlated significantly with Eysenck's N-Scale ($r=.02$ to $.049$, $p < .01$), (ii) Eysenck's P=scale correlated significantly with N-scale ($r=.26$, $p < .01$), (iii) the three cognitive measures, namely automatic thoughts, dysfunctional attitude, and hopelessness correlated positively and significantly amongst themselves ($r=.18$ to $.36$, $p < .01$), and (iv) loneliness measures correlated positively with hopelessness ($r=.39$, $p < .01$), Factor

L ($r = -.14$, $p < .05$), and negatively with extraversion ($r = -.20$, $p < .01$), and external locus of control ($r = -.31$, $p < .01$).

Factor Analysis : Factor I showed significant loadings on different components of Cattell's Second-order anxiety factor : Factor Q_3 (.74), C (.60), L (.26), O (.72), Q_4 (.76) and Eysenck's N-Scale (.70). Factor II has grouped together automatic thoughts (.72), dysfunctional attitude (.66), psychoticism (.62), and Factor L (.60).

Factor III is most revealing from the viewpoint of correlates of loneliness since it has shown significant loadings on loneliness (.79), extraversion (-.39), locus of control (-.61), and hopelessness (.66). L-scale (.42) and E-scale (-.70) of Eysenck Personality Questionnaire were the core variables of Factor IV. Furthermore, Factor V has grouped together L-scale (.65) and dysfunctional attitudes (-.42) which have emerged to be complex measures.

TABLE 2

Varimax Rotated Factor Matrix

S.No	Variables	I	II	III	IV	V	R^2
1.	Loneliness	04	11	79	19	-12	69
2.	Factor Q_3	74	-07	10	10	-04	57
3.	Factor C	60	-28	-12	24	12	46
4.	Factor L	26	60	—	12	12	46
5.	Factor O	72	04	18	11	-26	63
6.	Factor Q_4	76	09	00	13	24	67
7.	P-Scale	26	62	01	26	12	53
8.	E-Scale	-12	-04	-39	-70	-06	66
9.	N-Scale	70	19	-09	22	18	62
10.	L-Scale	-16	-11	19	42	65	67
11.	Internal-External	07	-26	-61	18	22	53
12.	ATQ	-16	72	10	07	-22	61
13.	DAS	20	66	12	10	-42	68
14.	Hopelessness	18	21	66	22	19	60
%Contribution		19.8	14.5	12.3	7.3	6.8	

Discussion

The factor structure reveals that Factor I has clearly brought together different prima-

ries, except Factor, L, which form Cattell's second-order factor of anxiety. The insignificant loading on Factor L, however, does not materially alter the nature of this factor. The

LONELINESS AMONG ADOLESCENTS IN RELATION

significant loading on N-scale of Eysenck Personality Questionnaire in addition to different components of second-order factor of anxiety points to the fact that Cattell's second order anxiety factor clearly bears a distinctive relation to Eysenck's N-factor. The obtained factor structure is in congruence with the results of several earlier investigations conducted in the Indian set up (Upmanyu & Singh, 1984; Upmanyu, Gill, & Singh, 1982; Hundal & Upmanyu, 1974; Hundal, Sudhaker, Sidhu, 1972).

Furthermore, it is significant to emphasize that the exclusion of loneliness from the factor structure indicates lack of association between loneliness and anxiety. It implies that anxiety does not lead to a feeling of absence of an adequate positive relationship to persons, places, or things. In other words, a feeling of deficit in one's social interactions is not due to anxiety.

Furthermore, a perusal of factor II reveals positive association between negative automatic thoughts, dysfunctional attitude and psychoticism. The absence of significant loading of loneliness on Factor II indicates lack of association between loneliness and negative automatic thoughts, dysfunctional attitudes and psychoticism. It is significant to emphasise that Factor III is most revealing from the viewpoint of correlates of loneliness. The factor structure reveals that loneliness correlated positively and significantly with hopelessness and negatively with locus of control and extraversion. The relationship reveals that male adolescents with internal locus of control, less social contact and higher amount of hopelessness were significantly more lonely. That is, males exhibit loneliness as a result of feelings of hopelessness and their own failures rather than external and uncontrollable causes, and with respect to the relationship between loneliness and locus of control, the present results are in congru-

ence with the findings of Schultz & Moore (1986), Corty & Young (1981), Jones, Freeman & Goswich (1981), and Schill, Troves, & Ramanaiah (1980). The results, however, appear incongruent with the findings of Moore & Schultz (1983) who found lonelier adolescent to show external locus of control. The investigators did not include hopelessness in the purview of their study. The present data suggest that male adolescents who attribute failures to their own but also exhibit higher amount of hopelessness tend to be more lonely. Possibly, male adolescents with internal orientation associated with hopelessness could use loneliness as a mode of coping with threat. The findings suggest that the likelihood of loneliness is increased by personal characteristics that undermine either the initiation or maintenance of relationships occurring as a result of internality associated with hopelessness. As others have noted (e.g., Rappoport, 1972), the social role of adolescents is a sort of "limbo" in which adolescents are deprived of a clear sense of belongingness, attachments, avenues of participation, and a socially affirmed role in the society, a major task of intervention seems to be the facilitation of attachments, commitments, and new modes of social participation.

It is important to emphasise, however, that the present data represent an initial look at the correlates of loneliness among Indian adolescents and because they are correlational they are subject to alternative interpretations. Nevertheless, the current study contributes to a growing literature which indicates that loneliness is an important social phenomenon. Clearly, more empirical research is needed in India, and the current results suggest some directions for further exploration to better understand loneliness dynamics and potential interventions among adolescents. To more thoroughly test our hypotheses there will be a need either to trace the sequence of loneliness-related events

over time (longitudinally) or to perform experimental research. Consequently, if counsellors have genuine concern for their clients and have a plausible portrait of human behaviour to work from, in the long run and in most instances, they should be able to do more good than harm.

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Psychological Problems of Adolescents in Relation to Intelligence and Socio-economic Status

PUSHPA CHAUDHARY AND BALVINDER KAUR MINHAS

ADOLESCENCE as a stage intervening between childhood and adulthood is a very critical period in the life of an individual. It is widely accepted as a 'problem age'. This label has two-fold meaning. First, the adolescent has many problems that occupy his/her time, and second that he/she is a problem to his/her parents, teachers and society in general. Because of his ambiguous status, the adolescent finds himself involved in emotional conflicts at home and outside, faced with problems of adjustment, insecurity and personal inadequacies, etc. In some of the earliest studies of the personal problems of the adolescents, Pope (1943) and Angelino (1956) found them related to worries about school work, educational and vocational future, relationships with teachers, emotional adjustment and emotions concerning physical changes. Meissner (1961) reported most of the adolescents' anxiety as socially oriented and expressed in shyness, lack of self-confidence, and fear of criticism. Wig, Nagpal and Khanna

(1969), Mukta and Shirali (1977) and Chaudhary (1979) found the psychological problems of students youth as those of inferiority feelings, emotional immaturity, personal adjustment, academic difficulties and problems relating to sex. Jain (1990) listed social and recreational activities, curriculum and teaching procedure, adjustment to college work and personal psychological relation areas of maximum difficulty amongst the college youth.

Studies have revealed various correlates of psychological problems of adolescents, such as, intelligence (Kuhlen 1963, Sharma 1978, Tandon, 1969) Socio-economic status (Krishnan, 1976, Kumar 1975). In few studies, both intelligence and socio-economic status have been found to be related to the psychological problems of adolescents (Magotra, 1982). Differences in the problems and frustration areas of boys and girls have also been reported (Magotra, 1982; Odiwuor 1989).

Need of the Study

The present study is directed at the identification and analysis of the psychological problems of adolescent students. It was planned keeping in view (i) the general need for an understanding of a crucial phase of the adolescents developmental process, i.e. their needs and concerns and the problems emanating from them (ii) the specific need for an analysis of these problems for purposes of enabling the parents and the teachers to help young adolescents achieve self-understanding and integration with the environment, (iii) the specific need of drawing attention to the need for guidance and counselling for the young people, (iv) to update so far as possible the researches in the area of present study and relate them to two very significant psycho-social variables i.e. Intelligence and SES.

The analysis of adolescent problems tested the hypotheses that (1) psychological problems are significantly related to intelligence and socio-economic status, and (2) there are sex differences in the psychological problems of the adolescents.

Methodology

Subjects : Subjects for the study were 150 adolescents within the age range 15-17 years. They were derived from +2 classes of the model and public schools of Chandigarh, using stratified random sampling technique. Both boys as well as girls constituted the subjects for the study.

Measures : The following tools were employed for the study : Minnesota Counselling Inventory (MCI) by Berdie and Layton (1957) was used for the identification of the psychological problems of the adolescent students. Consisting of 355 items, nine scores are obtainable from the inventory. It includes a question score (?) which is the number of omitted items and is used to determine the sufficiency of items

answered to justify scoring and validity score which helps to identify the over anxious students to display socially acceptable characteristics. Family relations, Social relations, Emotional Stability, Conformity, Adjustment to Reality, Mood and Leadership are the other seven areas of personality problems of young people. The higher scores on all the Scales of the MCI are indicative of more of problems.

The inventory was selected for the present investigation since it has been specially developed for use with the secondary school students. Adolescence and its concomitant issues and aspects being a world-wide phenomenon, the problems of the adolescents are universal except for those relating to dating, sex and marriage which are not very much relevant to the Indian context. A careful study of the items showed them as culture free and hence could be justifiably used on Indian population.

2. Raven's (1960) Standard Progressive Matrices was used as a measure of intelligence.

3. Socio-Economic Status Scale by Dev-Mohan (1972), consisting of 12 parts, the first three relating to Education, Occupation and Income and the remaining to social status, was used for determining the socio-economic status.

Procedure. The subjects were approached in their respective schools, wherever possible in groups, after assuring them of the confidentiality of their identity and responses, the tests/scales were administered to them.

Results and Discussion

Table 1 contains the means and standard deviations for boys and girls on all the variables. It can be seen that the highest mean score of the total sample is on the variable social relationships and the second highest is on adjustment to reality. The next in descending order are in the problem areas emotional stability and mood, the mean scores for which

are very close to each other. The next two mean scores are again very near to each other and they are in the areas family relations and conformity. The lowest mean score is on the variable leadership. The score for validity is within the acceptable limits (score 8 and above

invalidating the scale for further scoring) which means that the respondents have been fairly-truthful in returning the responses and there is no faking or defensiveness on their part to return socially desirable responses.

TABLE I

Means, SDS and "t" Ratios for the significance of Differences Between the Scores of Boys (N=75) and Girls (N=75) on all the Variables.

Sr. No.	Variables	Boys			Girls			SEM "t" ratios
		1 Mean	2 S.D	3 SEM	1 Mean	2 S.D	3 SEM	
1.	V	5.23	2.17	.25	5.52	1.83	.21	.89
2.	FR	11.09	3.15	.36	10.36	2.89	.33	1.48
3.	SR	19.01	5.18	.60	16.19	5.29	.61	3.30**
4.	ES	12.48	3.09	.36	12.63	3.96	.46	.25
5.	C	9.80	2.60	.30	11.47	3.77	.44	3.15**
6.	R	15.36	4.61	.53	14.84	5.02	.58	.66
7.	M	12.56	3.45	.40	12.15	3.99	.46	.68
8.	L	9.71	2.79	.32	9.77	2.98	.34	.14
9.	INT	44.14	5.72	.66	42.99	8.28	.96	1.00
10.	SES	78.43	14.49	1.67	82.69	12.97	1.50	1.90

** P < .01

Note : The Variables are-1. Validity, 2. Family relationships 3. Social Relations. 4. Emotional Stability 5. Conformity. 6. Adjustment to Reality, 7. Mood, 8. Leadership, 9. Intelligence, and 10. Socio-economic Status.

Subjects experience maximum amount of difficulty in the area of social relationships and the one following it is the adjustment to reality. The mean scores in these two areas are indicative of poor social adjustment and withdrawing personality characteristics. As regards MCI variable "mood", the mean score of the subjects is indicative of slightly more of pessimism than optimism. The standing of the total sample on family relations and emotional

stability is closer to that of the total population. On conformity, the mean score of the respondents is again closer to that of the total population—it's even less than that, which is indicative of normal amount of conformity. On leadership, the mean score is closer to the one for the counsellor nominated group which means possession of leadership qualities. The results in general reflect the fact that the adolescent students in the present sample do not have very

high scores on five of the eight MCI variables and hence they do not pose a cause for concern. Except for difficulty in establishing group relationships, adjustment to reality and some bit of pessimism and lack of enthusiasm, their scores correspond well to the norms. Even independently of their comparisons with the norms sample, the hierarchical order of the mean scores reflects areas of relative difficulty. The difficulty noticed in the three areas can be explained considering the age level of the subjects. Adolescents being some-what shy and hesitant at this stage may find it hard to establish stable social relationship. Adjustment to reality is naturally difficult since being still dreamy, idealistic and raw, realistic orientation to things and situations is yet to develop among them. A slight amount of pessimism is also understandable at this stage in view of the educational and future vocational uncertainties and the present status (a *gewise*) of the adolescents.

The mean score of subjects on the non-verbal intelligence test (SPM) corresponds to the percentile of 50. The sample thus reflects an average level of intelligence. The socio-economic status scale also indicates average status of the subjects.

In the next part of analysis the correlations between psychological problem areas and intelligence and socio-economic status were calculated for boys and girls separately. All the coefficients of correlation between all the variables of counselling inventory and scores on intelligence were insignificant except for the validity score. The value of "*r*" in this case was -0.168 ($P < .50$). Negative and significant relationship between intelligence and validity score in the context of the present study may be interpreted to mean that the average level of intelligence is accompanied by less of defensiveness and the absence of the tendency to choose responses that are socially desirable.

Tendency for taking or image creating responses may be more common amongst the less bright adolescents which those with comparatively higher or even average level of intelligence may not need to do.

The insignificant relationship between all other psychological problems and intelligence as found in the present study may be further explained by saying that the overall level of intelligence of the respondents is average. Given this level of intelligence, the students constituting the sample may not either be having many problems or they may not be very much conscious of their problems. Further, their demands and expectations may not be very much out of proportion to their potential and hence less liable to result in frustrations. Studies of Pereor (1974), and Magotra, (1982) support these findings.

As regards the relationship between psychological problems and socio-economic status, neither of the correlations was found to be significant. The same interpretation, therefore, holds good here also. Studies of Mattoo (1972), Sudha (1978), Kumar (1975) and Khan (1980) support the findings of lesser problems of adjustment at middle and higher levels of socio-economic status. Raju and Sanandraj (1984) on the basis of their study have also highlighted the significant influence of socio-economic status, religion and caste on self-esteem and adjustment, with the forward classes being higher on self-esteem and adjustment as compared to the backward classes.

The last part of results relates to sex differences in the psychological problems and in their relationship to intelligence and socio-economic status. As is clear from Table 1, there are significant differences between the mean scores of boys and girls on social relation, boys experiencing more social problems than the girls. Another important observation is that girls show significantly more conformity behaviour than

the boys. Sex differences were not observed to be significant in other problem areas. Significant differences in social relations with the higher mean score found in case of boys may be explained in terms of natural differences as related to sex since boys are generally more independent minded, assertive and aggressive. They may, therefore, find it more difficult to have stable and easy relationships with others.

Girls scoring significantly higher on conformity seems somewhat unusual. But the present social set-up with emphasis on equality of sexes explains girls being less conforming than the boys, at least in thought, if not conspicuously so in reality. Having to compete with men in various spheres of life, strict adherence to social and family norms may not always be helpful and hence their stronger reaction to it. Steinberg and Silverberg's (1986) study also pointed to the change of trend in 1960s onwards in the girls in the modern times becoming more autonomous and self-reliant. These were further found related to emotional autonomy and resistance to peer pressure in their study.

The results of the present study not reflecting major differences in the mean scores of boys and girls on majority of the problem areas is supported by the studies of Tripathi (1978) and Vohra (1990). The latter found sex differences in only two of the 11 problem areas determined.

The results of the present study, thus, suggest that though Indian adolescent boys and girls experience various kinds of problems, these are more conspicuous in regard to social relations, adjustment to reality, and mood. The usual association between psychological problems and intelligence, and problems and SES is found to be absent in the present study which may be due to the fact that both, intelligence and SES of the subjects in the present study was observed to be of average level. Further, significant sex differences have been found in only

two of the problem areas i.e. social relations and conformity.

Implications : The areas of maximum problems of the Indian adolescents in the present study are social relations, adjustment to reality, and mood. This shows need for counselling in these specific areas. Counselling otherwise too needs to be made available to the young students, preferably within the educational set-up itself.

Social relations as the area of maximum difficulty in the present investigation seems typical of the adolescents at the middle level of socio-economic status. The usual preoccupation of the parents with procuring the essentials and limited opportunity are resources keeps the children in these families deprived of facilities for cultural facilitation. Being at the same time exposed to the modernizing influences around, the children at the middle of socio-economic status may be self-conscious of their deficits specially when they have mediocre level of intelligence. There is need for resolving these complexes of the young people to enable them to have secure mental health.

Difficulty in the area of adjustment to reality and pessimism appear to be determined by the socio-cultural ethos of the country. With a manifold increase in educational competitiveness, lack of adequate alternatives and uncertainty in respect of future vocation are more specific to the Indian context. Additionally, the indeterminate status during the period of adolescence add up to the problems experienced. Something needs to be done to positiveness of attitude and optimism in the growing children. Girls scoring higher on non-conformity than the boys in the present study is a sharp pointer to the social change we are undergoing. Though a healthy sign, autonomy and self-reliance in girls needs to be usefully and positively channeled.

The adolescent student sample in the present study with middle socio-economic status and mediocre intelligence has not been found having psychological problems of serious concern. However, some amount of frustration

and dissatisfaction is necessary for upward mobility. Being content with whatever one is and has, is indicative of complacency and may lead to stagnation. Need for motivation and inspiration is imperative in such cases.

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Psychoticism and Neuroticism among Aggressive Adolescents of Rural and Urban Schools

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WITH the growing modernization and scientific developments, the socio-economic conditions and quality of life of people has improved but concomitantly social structure has also become complex. This owes to greater inter-personal and inter-group relations, social interactions and social conflicts (Andreyeva, 1980). Consequently, aggressiveness in society has enhanced to a large extent. The aggressive behaviour of teen-agers has adversely affected the normal life of people in society. The manifestation of aggressiveness among adolescents is noted in the forms of atrocities, terrorism, torture, rape and murder (Rathi and Rai 1989). The exuberant mental energy of youths particularly those at the stage of adolescence is misdirected and has come up, alarmingly, in the garb of extremism around the world (Baron and Byrne, 1987). In our country, the development of several states especially Punjab, Assam and Kashmir has been seriously retarded on account of the anti-social activities of extremist adolescents. Dave (1984) on the basis of her study reported

that the older preventives of aggressive behaviour in India such as religion, family values and social norms are gone, hence, the disregard for law and order is noticeable among the younger generation member.

Psycho-analytically, aggression is the result of suppressed emotions and feeling which, in turn, often results in misbehaviour and maladjustment in the aggressor as compensation (Freud, 1920; Adler, 1930). Aggression is a strong drive among adolescents which tends to find outlet through cut-throat competitions and even violence (Sinha, 1975).

It is necessary to focus another dimension of the problem by stating that aggression has dangerous consequences not only for those who are aggressed but also for those who aggress, that is, those who cause harm to the victims and at the same time break down their own personality make-up. The aggressors often develop neurotic and psychotic tendencies (Eysenck and Eysenck, 1971). It would be interesting, therefore, to study the extent of neu-

roticism and psychoticism among aggressive adolescents in comparison to those who are not aggressive.

The aggressive tendencies are observable among adolescents studying in rural as well as urban schools and also among adolescents belonging to different levels of socio-economic status. But the empirical studies of psychoticism and neuroticism as affected by aggressiveness, inhabitation and socio-economic status are miserably lacking. However, it appears from our day-to-day observations that the adolescents who are more aggressive show more psychotic and neurotic tendencies (Goldenson, 1984). Again, since the adolescents belonging to urban area live in more complex society, it may be that psychoticism and neuroticism in them are more than those belonging to rural area. Finally, low socio-economic status may accelerate the incidence of psychoticism and neuroticism among the adolescents. Keeping these rationalizations in view, the present study was planned to be conducted on psychoticism and neuroticism among more aggressive, less aggressive and non-aggressive adolescents of various socio-economic status studying in rural and urban schools.

Methodology

Subjects : The study was conducted with 480 male adolescent students of age group 14+ to 17+ studying in tenth class of higher secondary schools of Delhi. Subjects were taken from all the four districts of Delhi (East, West, North, and South). And from rural as well as urban schools. The sample was drawn by purposive random sampling method so as to include the subjects as per the requirement of the design of the study.

Tests & Tools : The following tests and tools were used in the study. All the measures have high reliability and validity and have test norms as well :

- (i) Psychoticism-Neuroticism Inventory by Eysenck (1970) as adapted by Singh (1975).
- (ii) Aggressiveness Scale by Pal and Naqvi (1983).
- (iii) Socio-economic status (Rural) by Pareek and Trivedi (1964)
- (iv) Socio-economic status scale (Urban) by Kuppaswamy (1981).

The study was based on $3 \times 2 \times 2$ factorial ex-post facto design with three categories of Aggressiveness (More aggressive, Less aggressive and Non-aggressive)*; two types of Inhabitation (Rural and Urban and two levels of Socio-economic Status (Upper and Lower)**). Thus, there were 12 groups in the present study with 40 subjects in each of the twelve groups.

Procedure : A pilot study was conducted to pre-test the tests and tools of the study over the adolescent subjects. Final data were collected in the schools from all the subjects with the help of the above cited tools in a separate room in calm and quiet atmosphere. The tests/tools were administered in small groups of 15 to 20 students.

Results and Discussion

The raw scores obtained by the subjects in the study were analysed statistically and the results so obtained are discussed in the following account, dependent variable-wise.

Psychoticism : The results of the analysis of variance carried out to study the effects of aggressiveness, inhabitation and SES on psy-

* Based on the norms of the Aggressiveness scale by pal and Naqvi (1983).

** Based on the norms of the S.E.S (rural) and S.E.S (urban) scales by pareek and Trivedi (1964), and by Kuppaswamy (1981) respectively.

choticism indicated significant effects of aggressiveness ($F=11.82$; $df=2,468$; $P < .01$). Further analysis indicated that mean psychoticism score of more aggressive subjects was significantly higher ($t=3.62$, $P < .01$) than that of less aggressive subjects and also mean psychoticism score of more aggressive subjects was significantly higher ($t=4.47$, $P < .01$) than that of non aggressive subjects. The effect of inhibition ($F=2.23$, $df=1,468$) and SES ($F=3.48$, $df=1,468$) were not observed to be significant, indicating that the extent of psychoticism was same in urban/rural and low/ high SES subjects. As regards inhabitation, the findings of the present study tallies with the finding of Landis and Page (1933) who reported that the cases of mental illness including psychoticism were almost equally distributed among rural and urban subjects, but differed in that there were more such cases in urban areas than in rural areas.

Among first order interactions, two interactions were significant, namely, between Aggressiveness and Inhabitation ($F=3.91$; $df=2,468$; $P \leq .05$) and between Inhabitation and Socio-Economic status ($F=13.92$; $df=1,468$; $P \leq .01$). It implied that Inhabitation interacted significantly with Aggressiveness as well as with Socio-Economic status to bring about significant variation in the extent of psychoticism scores of the subjects. Further, the F -ratio in respect of second order interaction was found to be non-significant which meant that the three independent variables did not interact significantly with each other to bring the significant variation in psychoticism scores of the subjects.

More aggressiveness among the more psychotic adolescents may be attributed to their psychotic tendency. This finding of the present study is in line with the findings of the studies of Eysenck and Eysenck (1971) who reported more prevalence of psychoticism among the

aggressive subjects than the normals. Similarly, Pati (1973), Blackburn (1975), Misra (1977), Singh (1981) and Rangaswami and Arungiri (1982) have observed the dominance of more psychotic disturbances among aggressive criminals. Also Morris (1956), Robins (1966), Desouza and Desouza (1987) diagnosed that the cases who showed symptoms of psychoses at an early stage evinced aggressive symptoms later in life. *Neuroticism*: The analysis of variance indicated that main effect Aggressiveness was significant ($F=14.39$; $df=2,468$; $P < .01$) in determining the prevalence of neuroticism among the subjects. However, inhabitation and socio-economic status were not the significant main effects. Thus, it appears that the extent of neuroticism was same in rural and urban subjects, and also in the subjects belonging to the upper and lower socio-economic status. These findings do not corroborate the results of a study by Srivastava et al. (1980) who reported that rural subjects showed more neurotic tendencies than urban subjects. Again, the results of present investigation do not correspond with the findings of the studies of Sharma (1987) and Sharma (1988) who observed that the economic inadequacies affect the development of neuroticism among the subjects. However, the finding of the present study is in line with the findings of Jogendra and Naidu (1976), Kureshi & Hussain (1982), Srivastava et al (1980) and Kumar (1984) who found that adolescents from different socio-economic status did not differ in the extent of neuroticism. It is further observed that F -ratios in regard to the first order as well as the second order interactions were not significant. It implied that none of the interactions among the independent variables could bring significant effect upon the neuroticism scores of the subjects.

As there were three categories of aggressive subjects, it was imperative to find out whether there were significant difference between the

mean neuroticism scores of the three categories. The results may be elucidated by stating that neuroticism was significantly higher in more aggressive subjects than less aggressive subjects ($t=3.85$; $d \leq .01$) and also mean neuroticism score of more aggressive subjects was significantly higher ($t=5.05$, $P < .01$) than that of non-aggressive subjects. But there was no significant difference between less aggressive and non-aggressive subjects in neuroticism. These results may be explained in terms of more neurotic tendency prevailing among more aggressive adolescents. These findings of the present investigation resemble with the findings of Willett (1964), Crasks (1968), Gold (1972), Hindlang & Weis (1972), Verma and Wig (1972) and Allsopp and Feldman (1975) who reported that highly neurotic subjects were more aggressive than those who were less neurotic.

Correlation between Psychoticism and Neuroticism: Coefficient of correlation was computed between psychoticism and neuroticism scores of the adolescents for each of the three categories (More Aggressive, Less Aggressive and Non-Aggressive categories with 160 adolescents in each category) by the product moment method, and the coefficient of correlation values obtained are stated as follows.

The results showed that correlation between psychoticism and neuroticism was of average range in case of More Aggressive adolescents ($r=0.52$; $P < .01$), low in case of Less Aggressive adolescents ($r=0.38$; $P < .01$) and very low in case of Non-Aggressive adolescents ($r=0.10$; $P < .05$). These findings may be interpreted by stating that among the adolescents, more aggressiveness caused enhancement of psychotic and neurotic tendencies much more than less aggressiveness or non-aggressiveness. This clearly evidenced that the effect of psychotic tendency on neurotic tendency and vice-

versa was governed largely by the extent of aggressiveness among the adolescents. This finding corroborates the findings of Eysenck & Eysenck (1971).

Conclusions

- 1.1 Psychoticism of the more aggressive subjects was significantly more than that of the less aggressive subjects and also significantly more than that of the non-aggressive subjects, but there was no significant difference between psychoticism of the less aggressive subjects and non-aggressive subjects.
- 1.2 Psychoticism of the subjects belonging to urban areas did not differ significantly from the subjects belonging to rural areas.
- 1.3 Psychoticism of the subjects from lower socio-economic status did not differ significantly from that of the subjects from upper socio-economic status.
- 2.1 Neuroticism of the more aggressive subjects was significantly more than that of the less aggressive subjects and also significantly more than that of the non-aggressive subjects; but there was no significant difference between neuroticism of the less aggressive subjects and non-aggressive subjects.
- 2.2 Neuroticism of the subjects belonging to urban areas did not differ significantly from the subjects belonging to rural areas.
- 2.3 Neuroticism of the subjects from lower socioeconomic status did not differ significantly from that of the subjects from upper socio-economic status.
- 3.1 There was average but significant positive correlation between Psychoticism and Neuroticism in case of More Aggressive adolescents.

- 3.2 There was low significant and positive correlation between Psychoticism and Neuroticism in case of Less aggressive adolescents.
- 3.3 There was very low, significant and positive correlation between Psychoticism and Neuroticism in case of Non-aggressive adolescents.

Practical Implication : The findings of the study under report has the practical implication that in order to reduce the extent of aggressiveness among adolescents, it would be essential for teachers and psychologists to observe and study the incidence of psychoticism and neuroticism among students during pre-adolescent, adoles-

cent and post-adolescent stages and attempt to identify and remove its causal factors. This is necessary in adolescent students studying in rural as well as urban schools, and in adolescents belonging to upper socio-economic status as well as low socio-economic status. Moreover, it is implied and suggested that since in case of highly aggressive adolescents, psychoticism and neuroticism go hand in hand therefore, both these tendencies must be studied together during adolescent development. Finally, it is suggested that suitable short term training course in identification, prevention and control of psychoticism and neuroticism be organised for teachers in schools and parents in homes.

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Differential Personality and Academic Achievement of Traditional and Modern Accultured Saora Tribe Adolescents

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THE SAORAS, living in the Koraput and Ganjam districts of Orissa, can be regarded as truly representative of the tribal communities of India. They are the best example of economically exploited people having unique multitudinous tribal and non-tribal milieu of the country. The history of the Saora from the earliest times has been narrated by many writers, like Elwin (1955), Mahapatra (1983) and Singh (1984). As the Saoras are poor, they have been deprived of the fruits of their labour by a host of people who exercise some kind of authority over them from generation to generation. Their problems are mainly because of their ignorance, chronic indebtedness, uneconomic holdings and primitive techniques of cultivation, etc. Recently contact with the other cultures, however, have developed a sense of strong morality and character, and have changed their outlook, mode of life and styles of living in the society. Even Elwin (1955) distinguished the Saoras of the

hills from the Saoras in the plains by certain cultural traits and it has also been seen in the present investigation that except for the hill or traditional Saora, the majority who have migrated to the plains, have lost their own culture, language, habits, tradition, etc., and use either Oriya or Telugu culture and language according to the neighbourhood where they live and can be treated as modern accultured Saora.

Culture-contact study in various tribal groups, noted by different anthropologists and educationists in and outside India, have expanded the scope of our knowledge from very beginning of the 20th century, and among them the studies of Ray (1975), Mahanta (1979) Panda (1986) Sahoo (1985) are noteworthy. There is a good deal of variation in the results of studies. Few studies, on the one hand, reported that culture contact leads to better personality adjustment, high aspirations, increased attitude towards culture change and better academic

achievement (Misra 1976; Mahanta, 1979; Sahoo 1985), contradictory findings have been reported by Ray (1975, 1977) and Singh (1985).

Since few studies have been conducted to study the effects of culture contact on personality and academic achievement and their results are also contradictory, the present study was planned to examine the effects of culture contact on personality and academic achievement among Saora tribe adolescents. It was hypothesized that there would be a significant difference in the personality patterns of traditional and modern accultured Saora tribe adolescents.

Methodology

Sample: 60 boys and 40 girls from traditional Saora tribal community, residing in the remote hilly areas following traditional culture and putting on loin clothes having two tails hanging down front and back of the public part, from the district of Ganjam, participated in the study. The subjects' age ranged between 12 and 14 years and were studying in grades seven and eight. Similarly, 55 boys and 45 girls from modern accultured Saora tribal community, matched on age, grade and economic status were selected. People from the tribal community who were more civilized were gradually leaving original Saora culture and following Oriya culture and people representing changes to a considerable extent in their original cultural pattern due to acculturation of Hindu Oriya way of living were included in the second category. The subjects were classified into traditional or modern accultured group on the basis of non-directive interview schedule and participant observation by the investigator.

Tools : In order to collect data, the Junior and Senior High School Personality Questionnaire (HSPQ) Form A, developed by Cattell and Cattell (1969) was administered to all the subjects to assess their personality characteristics. The HSPQ is a standardised test that can be

given within a class period, to a single individual or in groups. The HSPQ measures fourteen distinct dimensions or traits of personality which have been found by psychologists to come near to covering the total personality. Each of the fourteen dimensions of personality measured by HSPQ has a technical name and an alphabetical symbol for convenience and rapid reference. Each dimension is defined by two poles of extremes. The left hand one is a score at the low end and the right hand at the high end. The test is administered without a time limit, but takes generally 30 to 40 minutes. It can be administered to a class without any difficulty and the scoring can be done rapidly by a stencil key. The test was used in various categories of population and found quite feasible to yield a general assessment of personality among the secondary school students.

Reliability of the present test was calculated by split half method (odd-even method) and Test-retest method. The reliability co-efficients thus obtained by these methods were 0.83 and 0.79, respectively.

Similarly, in order to find out the validity of the test, English as well as Oriya version of the inventory were administered to 100 secondary school students who knew both the languages well and was found to be 0.84 which reflects the high validity co-efficient of the test. Again it was rechecked after an interval of one week. The co-efficient of correlation was 0.82 which showed the present inventory as a valid measure of personality in tribal regions.

The last annual examination marks secured by the students were considered as the academic achievement of subjects.

Results and Discussion

The significance of difference between mean personality and academic achievement scores of traditional and modern accultured Saora tribe adolescents was computed using 't' test. Table 1 contains the results of the same.

TABLE 1

Personality Factors and Academic Achievements of Traditional and Modern Accultured Saora Tribes.

Sl.No. Factors	Traditional		Modern		“t” Values
	\bar{X}	SD	\bar{X}	SD	
1. A	5.42	1.82	5.61	1.58	0.79
2. B	3.86	1.37	4.62	1.87	3.30**
3. C	4.95	1.93	6.54	1.84	5.89**
4. D	4.41	1.81	4.87	1.80	1.91
5. E	5.73	1.84	5.80	1.75	0.28
6. F	5.33	1.88	5.40	1.91	0.26
7. G	6.35	1.98	6.82	2.05	1.66
8. H	5.73	1.83	5.94	1.77	0.84
9. I	6.75	2.02	6.15	2.06	2.07*
10. J	6.61	1.64	6.37	1.75	3.96
11. O	5.30	1.63	4.50	1.74	3.20**
12. Q2	6.68	1.52	6.80	2.20	0.48
13. Q3	6.45	1.90	6.20	1.73	0.62
14. Q4	4.72	2.00	5.24	1.86	2.00*
15. Aca.Ach	87.25	9.65	96.00	12.85	5.43*

* $P < .05$ ** $P < .01$

The significant difference between the two groups were obtained on personality factors B (intelligence), C (affected by feelings vs. emotionally stable), I (tough minded vs. tender minded), O (self-assured vs. apprehensive) and Q4 (Relaxed vs. Tense). The traditional Saora adolescents were observed to be low on intelligence, emotionally less stable, tough-minded, self-confident and relaxed than their modern accultured counterparts. The academic achievement of traditional adolescents was also found to be significantly low than the accultured adolescents.

Table 2 shows the significance of difference in the personality pattern and academic achievement between traditional and modern accultured Saora boys. Significant differences were obtained in respect of personality factors B (intelligence), D (undemonstrative vs. excitable), J (zestful vs. circumspect individualism) and academic achievement. The traditional boys were found to be less intelligent, excitable and individualistic than their modern counterparts. The individualistic pattern of personality shown by traditional Saora boys is contradictory to the general conclusion that tribal way of living

TABLE 2

Comparison between Traditional and Modern Accultured Saora Boys on Personality and Academic Achievement

Sl. No	Factors	Traditional			Modern			"t" Values
		N.	Mn.	SD	N.	Mn.	SD	
1.	A.	60	5.50	1.78	55	5.58	1.69	0.26
2.	B.	60	3.54	1.30	55	4.35	1.36	3.24**
3.	C.	60	6.87	1.90	55	6.78	1.70	0.27
4.	D.	60	4.94	1.68	55	4.29	1.75	2.03*
5.	E.	60	5.55	1.79	55	5.78	1.76	0.39
6.	F.	60	5.30	1.72	55	5.00	2.03	0.29
7.	G.	60	6.31	1.98	55	6.45	2.09	0.41
8.	H.	60	5.75	1.70	55	6.02	1.88	0.79
9.	I.	60	7.35	1.78	55	6.92	1.74	1.35
10.	J.	60	6.45	1.57	55	5.82	1.72	2.03*
11.	O.	60	5.08	1.52	55	4.97	1.82	0.34
12.	Q2	60	5.42	1.97	55	6.15	2.11	0.73
13.	Q3	60	6.78	1.50	55	6.28	1.80	1.61
14.	Q4	60	5.19	1.90	55	4.75	2.10	1.19
15.	Aca.Ach	60	91.37	8.85	55	103.80	11.37	6.51**

*P < .05 ** P < .01

demands a sort of cooperation among the community for geographical and ecological reasons.

The personality pattern and academic achievement of traditional and modern Saora girls were also compared and the results are presented in Table 3. Significant differences were observed for personality factors B (intelligence), C (affected by feelings vs. emotionally stable), G (disregards rules vs. conscientious), J (zestful vs. circumspect individualism) and academic achievement. The traditional girls showed less

regards for the rules and were apprehensive than modern accultured girls. Their academic achievement was also found to be low than the modern girls.

The results of the study demonstrate differential personality patterns for modern and traditional adolescents of Saora tribe. Further, differences were observed in the personality pattern of boys and girls irrespective of culture contact. This may be due to the differences in the socialisation practices being practised in the sub-groups. It may be mentioned that in

any society, the socialization practices are the adaptive consequences of the ecological and economic differences and this is affected to a great extent by the education. The traditional tribal people, living in the forest are mainly poor and uneducated. Though the government is making all attempts to educate these people, the effects of the same are yet to be visualised.

TABLE 3

Comparison Between Traditional and Modern Accultured Saora Girls On Personality And Academic Achievement

Sl.No. Factors	Traditional			Modern			
	N.	Mn.	SD	N	MN	SD	"t" Values
1. A	40	5.27	1.96	45	5.60	1.57	0.87
2. B	40	3.25	1.64	45	4.92	2.00	4.18**
3. C	40	6.85	1.90	45	7.68	1.68	2.00*
4. D	40	4.75	2.05	45	4.55	1.92	0.45
5. E	40	6.33	1.87	45	6.16	1.68	0.44
6. F	40	5.18	2.12	45	5.37	1.71	0.45
7. G	40	6.25	1.97	45	7.18	1.87	2.21*
8. H	40	5.38	1.85	45	5.81	1.62	1.13
9. I	40	5.15	2.00	45	5.27	2.01	0.27
10. J	40	6.91	1.45	45	4.87	1.64	2.47*
11. O	40	5.76	1.78	45	6.85	6.63	0.18
12. Q2	40	7.18	1.83	45	7.53	2.01	0.90
13. Q3	40	5.70	1.65	45	6.15	1.76	1.22
14. Q4	40	4.88	1.84	45	4.69	1.95	0.46
16. Ac.Ach.	40	83.90	7.00	45	99.45	11.24	7.74*

*P <.05 ** P<.01

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